Annamaria Cividini (AMC) is senior Professor of the Dep. of Ingegneria Strutturale of the Politecnico di Milano. She teaches the subjects of "Mechanics of Structures", "Geotechnics", "Geotechnics and Foundations", and "Advanced Geotechnics". Her research works are up-to-dated developments of those subjects, particularly in the domain of applied numerical methods in Tunnels Excavations and Soil Grouting.

António Correia (AC) is senior Professor of the Dep. of Civil Engineering of the U. of Minho, Geotechnics Section, Director of the Research Centre UM - C-TAC, Ph.D by the Ecole Nationale des Ponts et Chaussées of Paris, Sc.D. TUP Lisbon.

Gaspar J. Machado (GJM) is Assistant Professor in the Dep. of Mathematics and Applications in the University of Minho. Presently, his main research interest is the development of high order finite volume schemes in order to apply to engineering and physics problems.

Giancarlo Gioda (GG) is senior Professor of the Dep. of Ingegneria Strutturale of the Politecnico di Milano. He teaches the subjects of "Foundations", "Underground Constructions" and "Retaining Structures". His research works are up-to-dated developments of those subjects, particularly in the domain of applied numerical methods.

J. Vieira de Lemos (JVS) is Senior Researcher of the National Laboratory of Civil Engineering (LNEC), equivalent to Senior Professor in the Universities. Vieira de Lemos is Ph.D. in Geo-Engineering, University of Minnesota, USA, Post-Doctoral Research Associate, University of Minnesota, USA. Chief Engineer of Mathematical and Physical Modelling, Dams Dep, in the LNEC. His research works, well known in the World, are mainly up-to-dated developments of the original subjects of his Ph.D thesis on the Distinct Element Method applied to Numerical Methods in Geomechanics.

Júlio B. Martins (JBM), Emeritus Prof. U. of Minho, Civil Eng. Depart. PhD, UPorto, Sc.D. UPorto, MSc. IC, London. His research works, are mainly up-to-dated developments of the subjects of his Ph.D thesis on Foundations Engg, (method of Numerical Integration of Hyperbolic P. D. Equations witch govern Limit Equilibrium in the case of the Bearing Capacity of Foundations).

Rui Pereira (RP) is Assistant Professor in the Dep. of Mathematics and Applications in the University of Minho. His main research area is the mathematical modeling of differential equations. The Course aims to introduce the extended evaluation of safety, regarding collapse or excessive settlement, for slopes, surface, and underground earth works. The point of view is that of Practice in Geotechnical and Foundations Engineering.

The course is intended for final year students of M.Sc. degrees in Civil Engineering (Geotechnics, Structures). Also for professionals with an interest in the area of Geomechanics (like Geotechnical Engineers, Structural Foundation Designers and Geology Engineers) and people interested in research in applied numerical methods. Since the Course is promoted by a Research Group in Computational Mathematics Applied to Geomechanics, Numerical Methods are particularly stressed.

Organising Committee Gaspar J. Machado Júlio B. Martins Rui Pereira

Main /

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Short Advanced Practical Course on Numerical Methods in Geomechanics

Universidade do Minho Guimarães | Portugal May 27, 28, 30 | 2011

Lecturers

Annamaria Cividini Politecnico di Milano, Italy

Gaspar J. Machado Universidade do Minho, Portugal

Giancarlo Gioda Politecnico di Milano, Italy

J. Vieira de Lemos Laboratório Nacional de Engenharia Civil, Portugal Júlio B. Martins

Universidade do Minho, Portugal

Rui Pereira Universidade do Minho, Portugal

Organiza







May 27, Friday

08:20-08:50 | Late Registration and Introduction (JBM) 08:50-09:40 | Lecture 1: Principles of soil/rock mechanics (AMC) 09:40-10:30 | Lecture 2: Principles of soil/rock mechanics: continuation (AMC) 10:30-11:00 | Coffee break 11:00-11:50 | Lecture 3: Basic aspects of the finite element method for linear stress analysis (GG) 11:50-12:40 | Lecture 4: Basic aspects of the finite element method: continuation (GG) 12:40-14:00 | Lunch break 14:00-14:50 | Lecture 5: The isoparametric finite element formulation (GG) 14:50-15:40 | Lecture 6: The finite element formulation for confined seepage analysis (GG) 15:40-16:00 | Coffee break 16:00-16:50 | Lecture 7: The finite element formulation for unconfined seepage flows (GG) 16:50-17:40 | Lecture 8: Laboratory testing (AMC) 17:40-18:30 | Lecture 9: In situ testing (AMC) 19:00-19:30 | Welcome by the Mayor of the City Council May 28, Saturday 09:00-09:50 | Lecture 10: Consolidation analysis by finite elements (GG) 09:50-10:40 | Lecture 11: Elastic plastic constitutive models for soils/rocks (AMC) 10:40-11:00 | Coffee break 11:00-10:30 | Lecture 12: Elastic plastic analysis by finite elements (GG) 11:50-12:40 | Lecture 13: Safety factor from rigid-plastic analysis: method of slices and similar (JBM) 12:40-14:00 | Lunch break 14:00-14:50 | Lecture 14: Safety factor from rigid-plastic analysis: continuation (JBM) 14:50-15:40 | Lecture 15: MATLAB programs for Fs calculation. Genetic algorithms to get the best Fs. (GJM + RP) 15:40-16:00 | Coffee break 16:00-16:50 | Lecture 16: Introduction to the back analysis of in situ measurements (GG) 16:50-17:40 | Lecture 17: Analysis and back analysis of deep

20:00 Official Dinner of the Course

May 30, Monday

09:00-09:50 | Lecture 18: Finite element analysis of soil

improvement techniques (AMC)

09:50-10:40 | Lecture 19: Finite element analysis of soil

improvement, continuation (AMC)

10:40-11:00 | Coffee break

11:00-11:50 | Lecture 20: Analysis and back analysis of tunnels, slopes, seepage flows (GG)

11:50-12:40 | Lecture 21: Eurocode 7 (JBM)

12:40-14:00 | Lunch break

14:00-14:50 | Lecture 22: Fundamentals and applications of

discrete element methods in rock mechanics (VL)

14:50-15:40 | Discussions Panel (all lecturers, AC, Chairman)

15:40-16:00 | Coffee break

16:00-16:50 | Closure of the Course and handling of Certificates of Attendance

Registration fees are: $500 \in$ for non members of any university or polytechnic institute; $250 \in$ for members of any university or polytechnic institute; $80 \in$ for students under application and justification.

The fee includes: attendance of the lectures, to participate in the discussions, documentation, coffee-break refreshments, lunches and Certificate of Attendance, but does not include accommodation, travel and other meals (a).

A maximum of 30 participants will be able to attend the course. Registrations will be made on the base of "first come, first served". The organizers retain the right to cancel the course. If the course is cancelled, the registered participants will be informed and the fee refunded. Please do not book travel tickets until your attendance has been confirmed.

See the Course Website for more details.

Payment must be done at the time of registration.

Registered attendants will receive a "password" for getting access to lecture notes online.

(a) Cancellations done by registered participants are nonrefundable.

How to reach Guimarães, Portugal from Oporto

(50 km away of Oporto Airport)

By taxi from Porto Airport: 60 minutes, cost of 60 to $80 {\ensuremath{\in}}$.

By Metro from Porto Airport to Campanhã Rail Station: 40 minutes, cost of 1.5€.

By urban trains from Campanhã to Guimarães Rail Station: 90 minutes, cost of 15€, but there are few trains a day (intervals of 1 to 2 hours).

By taxi from Guimarães Rail Station to UMinho in Guimarães: 15 minutes, cost of 10 to 20€.

By car from Porto Airport: 60 minutes by Highway, you can rent-a-car at the Airport; get Michelin Guide to well see the roads; get information about toll payments.

By bus: there are some carriers with some direct connections to Guimarães from many Portuguese and some Spanish cities. See Rede Expressos, Transdev, Renex and Alsa. Get information at Porto Airport.

How to reach Guimarães, Portugal from Lisbon (450 km away of Lisbon Airport)

By train: get Metro from Lisbon Airport to Gare do Oriente Rail Station (have to change lines): 40 minutes, cost of 2.0€, or get taxi from Lisbon Airport to Gare do Oriente Rail Station: 40 minutes, cost about 8.0€. Get fast train ("Alfa Pedular") from Gare do Oriente Rail Station to Campanhā Rail Station: 3 hours 30 minutes, cost of 30 to 45€, there are day trains at intervals of about 1 hour. Get taxi from Campanhā Rail Station to UMinho or hotel in Guimarães: 60 minutes, cost of 60 to 80€.

By car from Lisbon Airport: about 4 hours by Highway, you can rent-a-car at the Airport; get Michelin Guide to well see the roads; get information about toll payments.

By bus: there are some carriers with direct connections to Guimarães from many Portuguese and some Spanish cities. See Rede Expressos, Transdev, Renex and Alsa. Get information at Lisbon Airport.