UME FACULTY

Aiming at a unique diversity of teaching and research training, the organisation of the ROSE and REM Programmes is based on a relatively short permanence of scholars with extremely high qualification. Indeed, all lecturers are internationally recognised experts in their field, coming from a number of distinguished institutions.

Director
G.M. Calvi

Emeritus Director
M.J.N. Priestley

ROSE FACULTY

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A. Elgamal
A. Elghazouli
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M. Erdik
E. Faccioli
M.N. Fardis
G.L. Fenves
A. Filiatrault
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P. Gamba
M.C. Griffith
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T.J.R. Hughes
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J. Pettinga
R. Pinho
P.E. Pinto
C. Prato
J.H. Prevost
G. Rassati
E.M. Rathje
A. Reali
J. Restrepo
G. Rix
C. Scholz
D. Slejko
E. Spacone
J. Stanton
J.P. Stewart
H. Sucuoglu
T. Sullivan
J. Swanson
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REM FACULTY

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A. Borio di Tigliole
C. Burton
M. Cagnazzo
P. Calvi-Parisetti
G. Castellano
H. Crowley
M. De Clerck
F. Dell'Acqua
K. Demeter
R. Eguchi
S. Figini
P. Gamba
L. Garrido
S. Hochrainer-Stigler
G. Holland
D. Lallemant
F. Laurini
A. Loretti
R. Mechler
A. Mira
A. Monti
M. Oborne
A. Parvez
A. Pavese
F. Perugia
R. Pinho
M. Regester
J. Schneider
D. Stephenson
C. Tagliapietra
A. Taramelli
E. Todini
K. Verosub
P.L. Vidale
R. Vitolo
B. Youngman
S. Zatti

IUSS Pavia is the last step of a long lasting higher education process started on 825 when King Lotharius appointed Pavia, the ancient capital of the Lombard kingdom, as the site for higher education of his kingdom. This process went through the foundation in 1361 by Emperor Charles IV of the Studium Generale later on named University of Pavia. The first Colleges for university students were established in the 15th and 16th centuries. They are now 15 offering, to the almost 2.000 students, a unique opportunity of study and cultural enrichment in a multidisciplinary and multiethnic environment. Through the centuries University of Pavia became one of the leading institutions in Europe.

IUSS fulfils, since 1997, an advanced teaching and research model successfully implemented by other prestigious institutions in Italy, like Scuola Normale Superiore and Scuola Sant'Anna in Pisa. Due to the completeness of its education and training fields, which allows a strong interdisciplinary approach, the mission of IUSS is that of contributing to the growth of a small number of selected students by offering them, at any step of their higher education, qualified programs enhancing their capabilities and knowledge. The Institute is also committed to scientific progress by preparing young researchers and developing scientific research programmes.

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Education and Culture
Erasmus Mundus

The European Commission has approved and financed within the Erasmus Mundus II the Masters on Earthquake Engineering and Engineering Seismology (MEEES), coordinated by UME School and featuring also the participation of University of Grenoble Joseph Fourier (France), University of Patras (Greece) and Middle East Technical University (Turkey), which aims to enhance quality in European higher education and to promote intercultural understanding through co-operation with third countries, a number of scholarships are available for both non-European and European students. Interested applicants are invited to visit the MEEES website **(www.meees.org)** for detailed information and instructions on financial conditions and application procedure.

Design Eucentre 2013 - **Pavia, Italy**

IUSS Sapere Aude
Istituto Universitario di Studi Superiori Pavia

CAR - Collegio Cardinal Riboldi

Università degli Studi di Pavia

The Thirteenth International ROSE Seminar

and

The First International UME School Seminar

Collegio Cardinal Riboldi
Pavia, Italy
16-17 May 2013

UME Graduate School
understanding and managing extremes

Member of PAVIA RISK CENTRE

THE UME SCHOOL

The postgraduate school in Understanding and Managing Extremes (UME) is a new exciting development of IUSS Pavia (Institute for Advanced Study of Pavia, **www.iusspavia.it**), a higher education institution in Italy that offers international advanced postgraduate programmes (Masters and Doctorate). Innovative, internationally planned, open minded, grown on the traditionally fertile soil of the University of Pavia, and based on a system of Colleges unique in Italy, IUSS prepares brilliant individuals to take on the most challenging and demanding public and private posts in contemporary Italy, Europe and the rest of the world. In this framework, the UME School offers graduate programmes geared towards the evaluation of uncertainties, risk mitigation and emergency management. The key objective is to provide a system within which Masters and Doctoral candidates can study, understand and deal with extreme events. The UME programmes currently focus on three main areas:

- **Disaster risk assessment**, focusing mainly on natural hazards such as earthquakes, hurricanes, fires, landslides and floods (with possible extensions to the topics of climatology, desertification, human-made and technological risks, etc.)

- **Extreme situation management**, which includes topics of statistics and probability, law, economics, resource management, finance, insurance, sociology, ethics, psychology and medicine.

- **Engineering for risk mitigation**, which includes topics on engineering to increase the capacity of buildings and infrastructure to withstand the demands from extreme events.

At the UME School, each course is intensively taught in a period of one to four weeks, during which the respective lecturer is able to fully dedicate his/her time exclusively to the scholastic activities at the school, thus ensuring teaching and research training at the highest possible level of quality. All of the above endows a truly unique character to the UME School, be it for its fully international nature or for its innovative organisation in education and research training. Currently the UME School runs Masters and Doctoral Programmes in Earthquake Engineering and Engineering Seismology (ROSE) and Risk and Emergency Management (REM) whereas the Doctoral Programme curriculum in Weather Related Risk (WRR) will start in September 2013.

The ROSE Programme provides higher-level education in the broader field of earthquake engineering, offering a number of courses covering applied mechanics, structural engineering, earthquake engineering, and engineering seismology. In addition to the PhD Degree, the programme offers Masters Degrees in earthquake engineering and engineering seismology **with** (see the Erasmus Mundus paragraph overleaf) and **without** mobility. The REM Master and PhD Programme aims to train graduates and professionals in the assessment, mitigation and management of extreme events (both before and after they occur), with a primary focus on those arising from natural hazards and a secondary focus on human-made, technological and biomedical risk.

INTERNATIONAL ROSE SEMINARS AND FIRST UME SCHOOL SEMINAR

As a part of the ROSE Programme (formerly ROSE School), an International Seminar has been organised every year, to provide the students of the Programme with an opportunity to present and discuss their research work to an audience of international experts. In addition to standard presentations on research work carried out within the Programme, the annual Seminars feature also the tradition of inviting a prominent scientist to deliver a keynote lecture on a given contemporary and highly relevant topic in the field of Earthquake Engineering. At this year's event, the keynote address entitled *"Seismic Design of Nonstructural Building Elements: Why, How and Who?"* will be delivered by Professor André Filiatrault from the State University of New York, Buffalo, USA.

This year, for the first time, the Seminar will also feature the contribution of the REM Programme students, the first graduates since the beginning of the programme in September 2011. Accordingly, while keeping the traditional ROSE label, this year the Seminar will also be called the First International UME School Seminar.

ATTENDING THE EVENT

In addition to UME faculty and students, a maximum of 50 external participants may also be accepted, for which reason professionals and researchers worldwide are encouraged to take part in the event. A 160€ fee is required from external attendees, to cover for the cost of coffee/lunch breaks and seminar dinner. Special financial conditions are in place for university researchers or students, to whom a fee of 120€ is usually requested. Those who wish to attend the Seminar are kindly invited to compile and submit the registration form to the UME School Secretariat, at the address given overleaf. If you need assistance of any kind (registration form, accommodation, travelling directions, etc.), please do not hesitate in contacting our staff at **secretariat@umeschool.it**. You may also refer to the UME website (**www.umeschool.it**) for further information on all UME School activities.

VENUE

The UME School is located at the European Centre for Training and Research in Earthquake Engineering (EUCENTRE, **www.eucentre.it**), in Pavia, a historical town in the North of Italy (35 km from Milan), full of University tradition. The Seminar itself will take place at the Collegio Riboldi (**www.collegioriboldi.it**), a landmark structure dating back to the second half of the seventeenth century, purposely refurbished to serve as an international hosting facility for postgraduate students and visiting scholars working in the field of natural risk mitigation. It is located in the centre of Pavia, in Via Luigi Porta, 10.

UME Graduate School
understanding and managing extremes
IUSS

SEMINAR PROGRAMME

Thursday, 16th May

13.00 – 14.30 Welcome lunch and registration

14.30 – 16.15 **Session 1 - Chairman: P. Ceresa**

Direct displacement-based design of steel moment resisting frames with setbacks
C. Nievas[3], T. Sullivan
A new perspective on the performance of soft-storey buildings
H. Agha Beigi[1], T. Sullivan, C. Christopoulos, G.M. Calvi
Seismic design of coupled walls
M. Fox[1], T. Sullivan, K. Beyer
Design procedure and numerical simulation of progressive collapse in RC planar multi resisting frames
M. Rampa[3], R. Nascimbene

16.15 – 16.45 *Coffee break*

16.45 – 18.00 **Session 2 - Chairman: R. Monteiro**

Development of a methodology to derive fragility functions of retrofitted RC structures: Application to Istanbul
J. White[3], H. Crowley, V. Silva
Seismic vulnerability of Italian RC precast industrial structures
C. Casotto[1], V. Silva, R. Nascimbene, H. Crowley, D. Bolognini, R. Pinho
Bridge performance: New understanding following the February 22, 2011 Christchurch Earthquake
G.M. Bocchini[3], S. Giovinazzi, H. Crowley

19.30 – 23.30 *Seminar Dinner*

Friday, 17th May

09.00 – 11.00 **Session 3 - Chairman: R. Stein**

Definition of code-based elastic response spectra to account for near-fault effects
A. Cuevas[3], E. Zuccolo, C.G. Lai
Improvements to ultrasonic data analysis for full field damage evolution mapping in soft rocks
S. Turkaya[3], E. Tudisco, P. Roux, S. Hall
High frequency directivity effects: Evidence from Les Saintes records analysis
Y. Chen[3], J. Letort, F. Cotton, S. Drouet
Modelling of Coulomb stress change induced by the 2010 Maule earthquake, central Chile
E. Batsi[3], A. Socquet

11.00 – 11.30 *Coffee break*

11.30 – 13.15 **Session 4 - Chairman: A. Pavese**

Spaceborne radar remote sensing for extensive assessment of earthquake damage to buildings
M. Harb[1], F. Dell'Acqua, H. Crowley
Seismic performance evaluation of RC frames infilled with autoclave aerated concrete masonry
U.A. Siddiqui[3], H. Sucuoglu, A. Yakut
The application of post-tensioning techniques for enhancing the seismic performance of dry stone heritage monuments
M. Palmieri[1], A. Penna, G. Magenes
Use of equivalent SDOF systems for the evaluation of displacement demand for unreinforced masonry buildings
F. Graziotti[1], G. Magenes, A. Penna

13.15 – 14.30 *Lunch break*

14.30 – 16.30 **Session 5 - Chairman: G.M. Calvi**

Keynote lecture – Seismic Design of Nonstructural Building Elements: Why, How and Who?
André Filiatrault
Overview of 2012-2013 PaRC Activities
Graduation Ceremony

[1] PhD Student, [2] PhD Alumnus, [3] MSc Student