

1st SHORT COURSE ON MULTIHAZARD FOR EXTREME EVENTS: Fires, Explosions, Floods, Earthquakes, University of Cagliari (Italy), 17th – 20th September 2019

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The increasing complexity of human settlements characterized by significant demographic increases and socio-economic development, leads to interconnected urban and infrastructural systems. Consequently, the safety expectation and the reliability of the territorial systems is growing. In addition, recent climatic changes and greater awareness of the anthropized environment protection raise new questions to the scientific community.

Indeed, an increasing demand for risk prediction comes from civil society. New tools for risk assessment are necessary to mitigate the effects of extreme events, both natural and anthropogenic. The links and interconnections among these events represent the cutting edge of many civil engineering research fields. Thus, "multi-hazard", i.e. the possibility that individual events can be chained together negatively, is the core concept of this course.

Course content and objectives

Considering the main natural hazards (floods, earthquakes) and anthropic risks (fires, explosions), the course introduces to multi-hazard approaches.

In the first day an overview of the main risks and forecasting methodologies, with an emphasis on multi-hazard will be provided.

In the second day scientific insights on the fires and explosion effects on structures and infrastructures will be discussed.

During the third day natural risks like earthquakes will be analysed considering their impact on urban environment and infrastructures. A visit to an important LNG tank construction site will be held in the same day, where it will be possible to observe significant applications of risk assessment and mitigation techniques.

On the final day the flooding risk will be discussed with a focus on the past Italian experiences.

The main objective is thus to provide the participants with a solid basis for using multi-hazard approach in trying to achieve a robust and resilient design of urban environment and its infrastructure.

**Course Schedule**

Date	Time	Topic
17/09/2019	15:00-18:30	Multihazard
18/09/2019	09:00-13:30	Session 1 – Blast
18/09/2019	14:30-19:00	Session 2 – Fire
19/09/2019	09:00-13:30	Session 3 - Earthquake
19/09/2019	15:30-19:00	Visit to LNG tank construction site
20/09/2019	09:00-13:30	Session 4 – Flooding - Conclusions

Organizing Committee

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Detailed Programme**Tuesday September, 17th – Aula Magna Carta - Facoltà di Ing. e Architettura via Marengo 2**
Multihazard Session

15:00-15:20 – *Introduction* – **M. Sassu, F. Mistretta, F. Stochino**, University of Cagliari

15:30-16:30 – *Overview of Multihazard* – **F. Petrini**, University of Rome La Sapienza

16:30-17:30 – *Multihazard of Cultural Heritage* - **M. De Stefano**, University of Florence

17:30-18:30 – *Multihazard of Industrial Facilities* – **C. Butenweg**, FH Aachen University of Applied Sciences)

Wednesday September, 18th – Aula Berio - Facoltà di Ingegneria e Architettura via Marengo 2
Blast Load Session

09:00-10:00 – *RC structures under blast load: characteristics and peculiarities* – **F. Stochino**, University of Cagliari

10:00-11:00 – *Blast Engineering in Industrial Facilities* - **C. Butenweg**, FH Aachen University of Applied Sciences

11:00-11:30 – Coffee Break

11:30-12:30 – *RC slabs under Blast and Impact Load* - **J. Sagaseta**, University of Surrey - UK

12:30-13:30 – *Explosions and Particular Cases of Blast Load* – **G. Maselli**, University of Rome La Sapienza

13:30-14:30 – Lunch

Fire Session

14:30-15:30 – *Basic Aspects of Structural Safety Under Fire* – **A. Aguinagalde**, University of Rome La Sapienza

15:30-16:30 – *Case studies of fire events on structures* - **F. Mistretta**, University of Cagliari

16:30-17:00 - Coffee Break

17:00-18:00 – *Bridges under fire* - **I. Paya-Zaforteza**, Universitat Politècnica de València

18:00-19:00 – *Numerical Modelling of real Fire Scenario* – **F. Stochino**, University of Cagliari

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Thursday September, 19th – Aula Berio - Facoltà di Ingegneria e Architettura via Marengo 2

Earthquake Session

09.00-10:00 – *An Introduction on the Analysis of Site-City Interaction (SCI)* – **F. Taddei**, Technical University of Munich

10:00-11:00 – *Advances in rocking analysis for earthquake collapses* – **L. Giresini**, University of Pisa

11:00-11:30 – Coffee Break

11:30-12:30 – *Life-Cycle Seismic Resilience of Aging Bridge Networks under Climate Change* - **F. Biondini** – Politecnico di Milano

12:30-13:30 – *The role of irregularities in seismic design* - **M. De Stefano**, University of Florence

13:30-14:30 – Lunch

15:00-19:00 Visit to LNG tank construction site (Oristano)

Friday September, 20th – Aula Berio - Facoltà di Ingegneria e Architettura via Marengo 2

Flooding Session

9:00-10:00 – *Flooding risk of urban city walls* – **M. Sassu**, University of Cagliari

10:30-11:00 – *Statistical characterization of hydrological extremes* – **R. Deidda** – University of Cagliari

11:00-11:30 - Coffee Break

11:30-12:30 – *Safety assessment and strengthening of bridges of reduced span in case of extreme rainfalls* – **M.L. Puppio**, University of Pisa

12:30-13:30 – *Discussion ad concluding remarks*

Registration

Participants should communicate by e-mail a statement of participation to the Secretariat and, after the payment, send a scan copy of the bank transfer receipt. Registration is considered completed only after the bank transfer receipt has been received by the Secretariat.

Course fee is established as follows:

Whole course: 350 €

The fee comprises fixed-menu lunches, coffee breaks and course documents.

BCC BANCA DI CAGLIARI, Agenzia Viale Ciusa - Cagliari

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Secretariat

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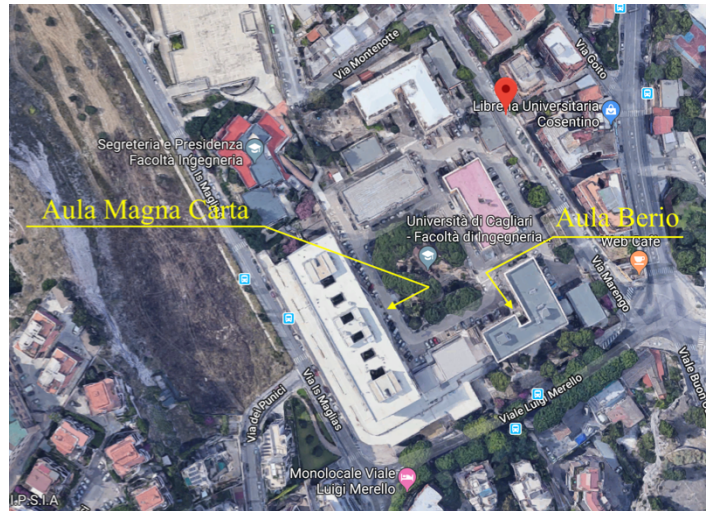
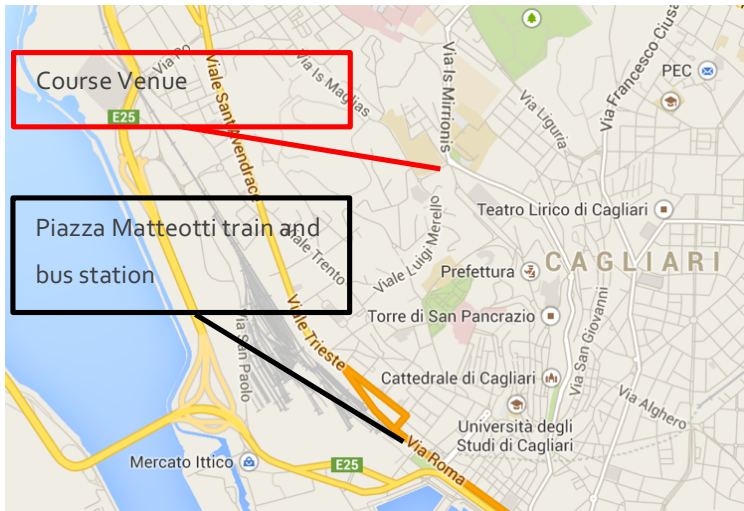
Mail: fstochino@unica.it

Building A - Via Marengo 2, 09123 Cagliari (Italy)

Course Location

Faculty of Engineering and Architecture, University of Cagliari, via Marengo 2, 09123 Cagliari (Italy)

- Aula Magna Carta – Faculty of Engineering and Architecture
- Aula Berio – Building A - Faculty of Engineering and Architecture



Practical information

The course venue can be reached from the central station of Piazza Matteotti with the following buses:

- CTM Line n. 5: Piazza Matteotti – Via Merello (Ingegneria)
- CTM Line n. 8: Piazza Matteotti -Piazza d'Armi (Ingegneria)

The Cagliari Elmas airport (CAG) is connected to the central station of Piazza Matteotti with the airport-central train station every 20 minutes from 5.20 to 21.00. In the night hours a bus service is available.

Recommended Hotels:

Hotel Sardegna - via Lunigiana, 50 Tel. +39.070.286245 info@sardegnahotelcagliari.it
www.sardegnahotelcagliari.it/

Hotel Italia - Via Sardegna 31, Cagliari www.hotelitaliacagliari.com +39 070-660410; 070-660510
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