

Background and Motivation

The tremendous impact of natural hazards, such as earthquakes, tsunamis, flooding, etc, which triggered technological accidents, referred to as natural-technological (NaTech) events, was demonstrated, for instance by the recent Tohoku earthquake and the following Fukushima disaster in 2011 or by the UK's 2015 winter floods which topped £5bn, with thousands of families and businesses that faced financial problems because of inadequate or non-existent insurance. The NaTech problem is quite relevant as up to 10% of industrial accidents, involving the release of Chemical, Biological, Radiological, Nuclear and high yield Explosives (CBRNE) substances, were triggered by natural hazards. To implement and support the Seveso III Directive 2012/18/EU which regulates the control of major accident hazards involving dangerous substances, XP-RESILIENCE intends to establish a network of individual research projects working towards

Advanced Modelling and Protection – via metamaterial-based isolators/layouts- of Complex Engineering Systems for Disaster Reduction and Resilient Communities. In this respect, this course has the aim to offer to students and scholars a clear overview of the problems and the available solutions and tools. With important experts on Resilience and Na-tech risk the course will be a unique occasion to familiarize with this hot topic and be in contact with the resilience and risk calculation community.

Lecturers

Jamie Padgett is an Associate Professor at the Rice University in Houston, USA. Her research focuses on the application of probabilistic methods for risk assessment of infrastructure, including the subsequent quantification of resilience and sustainability. Her work emphasizes infrastructure portfolios such as regional portfolios of bridges or oil storage tanks exposed to multiple hazards, including earthquakes, hurricanes, or aging and deterioration..



Keisuke Minagawa is Associate professor in Mechanical Engineering at Saitama Institute of Technology – Department of Engineering, Japan. His main scientific interests are mainly focused on seismic isolation and passive vibration control.



Paolo Gardoni is a Professor and Excellence Faculty Scholar in Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign. He is the Director of the MAE Center and the founder and Editor-in-Chief of the journal Sustainable and Resilient Infrastructure published by Taylor and Francis Group. Dr. Gardoni's research interests include sustainable and resilient infrastructure; reliability, risk and life cycle analysis; and ethical, social, and legal dimensions of risk.



Marco De Angelis Marco is a postdoctoral research associate at the University of Liverpool since May 2018. His research focuses on the efficient and rigorous uncertainty propagation through computational codes via both intrusive and non-intrusive algorithms.

He is appointed for the Uncertainty theme on the EPSRC programme grant on Digital Twins for improved dynamic design. He holds a PhD in risk and uncertainty in engineering systems from the University of Liverpool and an MSc and BSc cum laude from Roma Tre in engineering for the mitigation of natural risks.



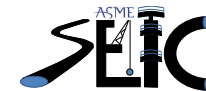
Daniele Coritore is Research Associate in Structural Engineering at the Roma Tre University – Department of Engineering, Italy. His main scientific interests are mainly focused on earthquake engineering, seismic risk assessment and resilience of industrial plants.



Nicola Tondini is Assistant professor in Structural Engineering at the University of Trento – Department of Civil, Env. and Mechanical Engineering, Italy. His main scientific interests are mainly focused on the behaviour of structural systems subjected to accidental actions, i.e. fire and earthquake.



Edoardo Patelli is Associate professor at the Institute for Risk and Uncertainty, University of Liverpool, UK. His main scientific interests are mainly focused on developing efficient tools for Safety and Uncertainty Quantification able to deal with scarce data and vague information and their application to safety critical systems, power networks and smart grids and decision making under uncertainty



Course on

Na-tech Risk Assessment of Industrial installations and mitigation strategies

Coordinate by

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Oreste S. Bursi

Roma Tre University
ASME PVPD – SETC

University of Trento
ASME PVPD - SETC

Seminar Room of Civil Engineering

11-13 September 2019

Course objective

The main objective of this workshop is to familiarize Early Stage and Experienced Researchers with Na-Tech risk and resilience of industrial facilities and critical infrastructures and mitigation strategies.

Who should attend

Graduated students, postdoctoral researchers and practitioners.

Course outline

The course will intend to provide

- Basic and advanced concepts for Na-Tech risk and resilience calculation
- Vulnerability analysis of the most critical industrial facilities
- Risk analysis methods of major-hazard industrial installations
- Resilience concepts also applied to industrial facilities
- Mitigation strategies for industrial facilities

Course schedule

Wednesday 11

13.45-14.00 Registration and Opening

Lecture 1

14.00-15.30 **Jamie Padgett** – Rice University - Risk assessment of above ground tanks under concurrent coastal hazards Part A: Probabilistic modeling

15.30-15.45 Coffee Break

15.45-17.45 **Jamie Padgett** – Rice University - Risk assessment of above ground tanks under concurrent coastal hazards - Part B: Leveraging cyberinfrastructure

20.30 -23.30 **Social Dinner**

Thursday 12

Lecture 2

8.30-10.30 **Edoardo Patelli** – University of Liverpool - Efficient Monte Carlo simulation techniques for complex and large system

10.30-10.45 Coffee Break

10.45-12.45 **Marco De Angelis** - University of Liverpool - Exotic dependency declarations in structural reliability

12.45-14.00 Lunch (by your Own)

Lecture 3

14.00-15.30 **Paolo Gardoni** – University of Illinois - *Regional Risk and Resilience Analysis – Part 1*

15.30-15.45 Coffee Break

15.45-17.45 **Paolo Gardoni** – University of Illinois - *Regional Risk and Resilience Analysis – Part 2*

Friday 13

Lecture 4

8.30-10.30 **Keisuke Minagawa** – Saitama Int. of Technology, Japan - *Seismic Isolation of industrial facilities*

10.30-10.45 Coffee Break

10.45-12.45 **Daniele Coritore** – University of Roma Tre – Dep- of Engineering - *Traditional and innovative mitigation strategies for industrial Facilities*

12.45-14.00 Lunch (by your Own)

Lecture 3

14.00-15.30 **Keisuke Minagawa**- Saitama Int. of Technology, Japan - *Passive Vibration Control of industrial facilities*

15.30-15.45 Coffee Break

15.45-17.45 **Nicola Todini** – University of Trento - *The effect of fires on industrial equipment: localised fires and structural behaviour*

17.45-18.00 Closure



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 721816



Registration

The participation fee of 350€ includes Coffee Breaks, hot beverages, Social dinner, Wi-Fi connection, notes and slides. To register please fill the following form and e-mailing it to: marina.cibati@uniroma3.it and silvia.alessandri@uniroma3.it by **September 1, 2019**

Course on

Na-tech Risk Assessment of Industrial installations and mitigation strategies

Rome, September 11 - 13, 2019

Application Form

(Please print or type)

Surname _____

Name _____

Affiliation _____

Address _____

E-mail _____

Phone _____

Fax _____

Method of payment upon receipt of confirmation

The fee of Euro 350,00 includes IVA/VAT tax and excludes bank charges

Payment will be made to Roma Tre University - Bank Account - IBAN IT16Z0503403207000000300003 - BIC/SWIFT BAPPIT22 - Copy of the receipt should be sent to the secretariat

IMPORTANT: Please indicate to whom the invoice should be addressed.

Name _____

Address _____

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 Roma Tre University and its activities, within the limits set by the Italian legislative decree no. 196/2003 and subsequent amendments.

Complete information on Roma Tre University privacy policy is available at www.uniroma3.it.

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

Date _____ Signature _____