Critical Infrastructure Resilience
July 20 - 24, 2020
Venice International University
Isola di San Servolo, Venice
VIU Summer School

Critical Infrastructure Resilience

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Scientific Coordinator:

Erdem Ergin, University of Rome Tor Vergata

In its fourth edition, the summer school on Critical Infrastructure Resilience (CIR) offers a scientific approach to prioritize risk and a pragmatic framework to develop resilience solutions.

Academics and professionals come together to offer this course because resilience is a key feature, whether we work at city or business or sector scale. We believe that:

- The hazards are evolving fast, ranging from terrorism and cyber threat to natural disasters and climate change. The course takes an impact base approach rather than developing specific scenarios.

- The exposure and vulnerability are increasing, both in quantitative and qualitative terms. The course discusses various methods of assessing risk based on available information, even if not perfect.

- The decision-making mechanism may be biased, due to the complexity of models and inter-connectivity of systems. The course discusses decision-making alternatives from real business cases.

Many of us experience more connectivity in the way we work and more complexity in our products and services. The same is true for many of our infrastructure, cities and economies. Although this allows us to be more productive and efficient, when there is a failure in a key location, the impact is also shared throughout the system. The notion of critical infrastructure (CI) come very handy to support efforts for a resilient society. It is a pragmatic tool to deal with the inter-connected and complex society we live in as it allows us to (i) see the dependencies, (ii) deal with the uncertainties, and (iii) understand the impacts and effects within and beyond our system.

The course consists of a mix of theoretical knowledge, case studies/projects and hands-on exercises. The beautiful city of Venice is an ideal place that participants can use to identify a critical infrastructure, assess its risk and develop resilience strategies. This course will discuss the concept of CI and aims to provide the participants (i) a clear understanding of what resilience means for their work, (ii) methods to assess risk and priorities, and (iii) an overview of tools and solutions from recent applications.
Who is it for?
Professionals, officials and graduate students already working on the topic or thinking their work may benefit from it. Ability to read and write fluently in English is a must.

Faculty
Erdem Ergin, University of Rome Tor Vergata/UNDP
Louis Boutaud de la Combe, Business Coach
Carlo Giupponi, Università Ca’ Foscari Venezia
Carlo Papa, Enel Foundation
Federico Carturan, RiskApp
Jonas Johansson, Lund University (tbc)

Topics
Critical infrastructure
A critical infrastructure is “An asset, system or part thereof which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact”.

Cascading Impact and ranking criticality
The course will use concrete case studies to discuss how to measure impact (whether social, economic, environmental or political), how to assess the transfer/propagation of impact (whether through a supply-chain, the global aviation system or between countries), and how to assess the importance (ranking) of criticality.

Resilience
Resilience is “the capacity of a system to absorb disturbance and re-organize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks.” This definition means that we consider 2 types of impact: (i) an extreme event that can affect the physical integrity of a CI and/or disrupt its core function and (ii) a change in operating conditions that can affect the performance of the CI.

Course outline
The 5-day course consists of 10 modules:
M1 – Definition & role of critical infrastructure
M2 – Applied work – Define CI
M3 – Cascading impacts & ranking criticality
M4 – Applied work – Measure impact
M5 – Risk Assessment techniques
M6 – Applied work – Understand risk
M7 – Decision-making under uncertainty
M8 – Applied work – Prioritize decisions
M9 – Business case of Enel Group
M10 – Course wrap-up

Application procedure and cost
The Program will admit up to 25 student participants.

Fees:
Participants of VIU member universities: € 300 incl. VAT.
Participants of other universities/professionals: € 600 incl. VAT

The fees will cover tuition, course materials, lunches in the VIU cafeteria and social events.
Participants will be responsible for covering their own travel expenses to and from Venice and local transportation.
VIU Alumni are eligible for a reduced fee.
PhD Students in EU universities may be eligible for Erasmus+ funding. Refer to international offices in home universities or contact VIU Erasmus office: erasmus@univiu.org.

Accommodation costs on campus
The costs of accommodation on campus in shared room with other participants (triple or quadruple) is 290 € for 6 nights. Further information will be available in the Application form.

On-line application
Available from March 3 to April 15, 2020 on the VIU website.

Applicants must submit the application form, a letter of motivation – which should include a brief description of the candidate’s research interests, a curriculum vitae and a photo.

Credits
Number of ECTS credits allocated: 2.
A certificate of attendance will be issued at the end of the course.
Location

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