



VIU SUMMER SCHOOL critical InFrAstruCTure resILIENCE

**Critical Infrastructure Resilience
September 7-25, 2020
Virtual edition**

VIU Summer School

Critical Infrastructure Resilience

Virtual edition

3 weeks part-time format

September 7 – 25, 2020

Scientific Coordinator:

Erdem Ergin,
Tor Vergata University of
Rome

The Covid-19 pandemic is the most recent shock that has affected our societies, and there are still significant uncertainties remaining for 2020 and 2021. Decision-making is the single most effective factor in conditioning a successful recovery and building resilience for the crises to come.

In this fourth edition, the summer school on Critical Infrastructure Resilience (CIR) offers a pragmatic framework and a tactical decision-making tool for resilience. The tool is actively used by professionals, public authorities and academics. The course has a scientific approach combined with a hands-on interactive format designed for a multidisciplinary audience.

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

- The hazards are evolving fast, ranging from terrorism and cyber threats to natural disasters and climate change. The course takes an impact-based approach rather than developing specific scenarios.
- 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 is 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 are experiencing more connectivity in the way we work and more complexity in our products and services. The same is true for many of our infrastructures, 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) becomes very useful to support efforts to build 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. This course will discuss the concept of CI and aims to provide the participants with (i) a clear understanding of what resilience means for their work, (ii) methods to assess opportunities and priorities, and with (iii) a series of existing decision-making tools used by companies and countries.

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, Tor Vergata University of Rome /UNDP

Carlo Giupponi, Università Ca' Foscari Venezia

Carlo Papa, Enel Foundation

Giovanni Valtorta, e-distribuzione

Federico Carturan, RiskApp

Jonas Johansson, Lund University

Margot Christeller, Leaver Co.

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 and Schedule

Due to the pandemic, the course will be online this year. It will span over 3 weeks and consists of 10 modules of 3 hours each.

Please note that on Friday, September 18 there are 2 modules. All times given are in Central European Summer Time (UTC+2).

Monday September 7, 12:00 – 3:00 pm

M1 - Definition & role of critical infrastructure

Wednesday, September 9, 12:00 – 3:00 pm

M2 - Impacts & ranking criticality

Friday, September 11, 12:00 – 3:00 pm

M3 - Tactical tools from crisis management

Monday, September 4, 12:00 – 3:00 pm

M4 - RiskApp, cascading impact software

Wednesday, September 16, 12:00 – 3:00 pm

M5 - Cascading impact evaluation examples

Friday, September 18, 12:00 – 5:00 pm

M6 - Sustainability in operations: the case for resiliency to enter the boardroom

M7 - Decision-making under uncertainty

Monday September 21, 12:00 – 3:00 pm

M8 - Tactical tools for recovery

Wednesday, September 23, 12:00 – 3:00 pm

M9 - CI Resilience solutions from infrastructure, business and agriculture

Friday, September 25, 12:00 – 3:00 pm

M10 - Applied work and Course Wrap-up

Application procedure and cost

The Program will admit up to 25 participants.

On-line application

Available from July 7 to August 27, 2020 on the VIU website.

Early Bird fees until August 10:

Participants of VIU member universities:

€ 150 incl. VAT.

Participants of other universities/professionals:

€ 300 incl. VAT.

Notification of admission and fee payment by August 20.

Rolling Admission until August 27:

Participants of VIU member universities:

€ 200 incl. VAT.

Participants of other universities/professionals:

€ 400 incl. VAT

Notification of admission and fee payment by August 20

The fees will cover tuition and course materials.

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.

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

ECTS equivalence: 2.

A certificate of attendance will be issued at the end of the course.

Friday September 18 will be organized in cooperation and with the scientific support of **Enel Foundation** and its **Open Africa Power Program**: an education venture initiated by Enel Foundation in 2018 in partnership with top Academic institutions in Italy and Africa, aiming to forge a new generation of African leaders deeply engaged with their country's clean energy future. The Open Africa Power Program provides high-profile African graduates with a holistic knowhow of the electricity sector, enhancing the technical, regulatory and business skills required to work in the private and public sector towards the electrification of Africa."

Participants of OAP and CIR summer schools will join in modules 6 and 7, in which different experiences will intersect and the participants can have a fruitful exchange.



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