

INTERNATIONAL SUMMER SCHOOL
JULY 22ND- AUGUST 2ND, 2019 - NEW YORK



WORLD HERITAGE STUDIES



Urban resilience in a changing world: energy, safety and wellbeing challenges

Opening workshop – July 22nd, 2019

NYU Tandon School of Engineering, CUSP Center, NYC

Urban environment hosts more than 60% of the total world population worldwide and in less than 30 years almost 80% of the total population is expected to live in anthropized urban areas, increasingly affected by climate change and seismic hazards. Urban resilience to environmental and structural risks and damages has become an urgent issue to be addressed by means of tailored strategies involving the whole multidisciplinary engineering-based skills, such as structural health monitoring together with environmental monitoring of the built environment. This course will bridge these key topics by means of an exhaustive comprehensive and consistent approach, giving the students the proper tools to focus on urban resilience, structural safety and wellbeing in the indoors and outdoors affected by climate change related forcing. Acknowledged scientists from NYC area and important universities will participate as lectures with their students. Field visits and experimental activities in Manhattan will be carried out during the program weeks.

Full Course Program

Wellbeing in the urban environment

Urban climate issues and outdoor wellbeing of urban population
Urban canopy, big data analysis, citizen science, mesoscale climate assessment
Mitigation strategies for urban climate change resilience

Smart technologies for structural safety

Fundamentals of structural identification for SHM
Fundamentals of SHM and smart structures
Smart sensing technologies for SHM

Total number of lecturing hours: 48 in 10 days

2 outdoor visits in construction fields and urban monitoring areas

Invited lecturers: Elie Bou Zeid (Princeton University), Simon Laflamme (IOWA State University), Mazzino Porfiri (NYU), Masoud Ghandehari (NYU CUSP), Prathap Ramamourthy (CCNY), Austin Downey (University of South Carolina), Francesco Cappa (LUISS Guido Carli), Gian Marco Revel (Politecnica delle Marche), Ryan Wang (Northeastern University) Marco Giometto (Columbia University) and others

Filippo Ubertini filippo.ubertini@unipg.it (Univ. Perugia)
Massimiliano Gioffré massimiliano.gioffre@unipg.it (Univ. Perugia)
Anna Laura Pisello anna.pisello@unipg.it (Univ. Perugia)
Federica Rosso federica.rosso@uniroma1.it (Univ. Sapienza)

Organized by H2CU - For more info, please contact the scientific coordinators:

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Opening workshop – July 22nd, 2019 - 09:00 am – 1:30 pm

- 9:00 am - Course presentation, Logistics and final assignment (A.L. Pisello - UNIPG)
- 9:10 am - The Urban resilience issue from multiperspective research eyes (A.L. Pisello - UNIPG)
- 9:30 am - Urban resilience for cultural heritage preservation (M. Giofrè - UNIPG)
- 10:00 am - Urban resilience and big data analytics in New York (M. Ghandehari – NYU CUSP)
- 10:45 am - EU research and tech transfer toward resilient built environment (G.M. Revel – UNI POLIMARCHE)
- 11:30 am - Urban resilience in dynamic systems (M. Porfiri - NYU)
- 12:00 pm - Urban resilience in citizen science (F. Cappa – LUISS Guido Carli)
- 12:30 pm - Urban resilience for structural safety and security (F. Ubertini - UNIPG)
- 1:00 pm - Closing remarks (F. Ubertini - UNIPG)



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SAPIENZA
UNIVERSITÀ DI ROMA



United Nations
Educational, Scientific and
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UNITWIN Network in
Global Pharmacy
Education Development

Urban resilience in a changing world: energy, safety and wellbeing challenges

Weekly Program 1/2

LECTURES
1-2

by prof. Massimiliano Giofrè (University of Perugia) July 23rd, 2019 09:00 am – 1:00 pm
Fundamentals of structural identification for SHM
Case studies in ancient bridge architectures in Italy

LECTURES
3

by prof. Anna Laura Pisello (University of Perugia) July 24th, 2019 09:00 am – 11:00 am
Fundamentals of urban wellbeing: Urban Heat Island and Urban Noise Island
Microclimate analysis in urban areas: cultural heritage preservation,
tourism resilience, wearable sensing techniques for citizens' active participation

LECTURE
4

by prof. Gian Marco Revel (Università Politecnica delle Marche) July 24th, 2019 11:00 am – 1:00 pm
New sensing techniques for indoor wellbeing and environmental sustainability
in the built environment: a European perspective

LECTURES
5-6

by prof. Revel (Università Politecnica delle Marche) and prof. Pisello (UNIPG) July 24th, 2019
2:00 pm – 6:00 pm Field visit to a construction site in New York by Focchi Group

LECTURE
7

by prof. Elie Bou Zeid (Princeton University) July 25th, 2019 09:00 am – 11:00 am
Urban canopy models and urban climate studies in the US
Heat waves and energy implications

LECTURE
8

by prof. Prathap Ramamurthy (CUNY) July 25th, 2019 11:00 am – 1:00 pm
Influence of urban materials and morphology on the surface energy
budget and air quality: investigations in New York City

LECTURE
9

by dr. Federica Rosso (Sapienza Università di Roma) July 26th, 2019 09:00 am – 11:00 am
Novel and traditional materials for energy retrofit and wellbeing in urban areas:
Building envelope solutions and performance analysis

LECTURE
10

by dr. Simon Sylvester-Chaudhuri (CIV:LAB, Smart Cities New York)
July 26th, 2019 11:00 am – 1:00 pm - Urban Tech in NYC



Filippo Ubertini filippo.ubertini@unipg.it (Univ. Perugia)
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Weekly Program 2/2

LECTURES
1-2

by prof. Filippo Ubertini (University of Perugia) July 29th, 2019 09:00 am – 1:00 pm
Fundamentals of SHM and smart structures
Smart sensing technologies for SHM

LECTURE
3

by prof. Simon Laflamme (Iowa State University) July 29th, 2019 2:00 pm – 4:00 pm
Smart multifunctional materials and techniques for SHM of
infrastructures and wind energy systems

LECTURE
4

by Prof. Austin Downey (University of South Carolina) July 29th, 2019 4:00 pm – 6:00 pm
Solutions for Mesoscale monitoring

LECTURE
5

by prof. Marco Giometto (Columbia University) July 30th, 2019 09:00 am – 11:00 am
Geophysics, engineering, biology, and energy technologies
implications of urban climate change

LECTURE
6

by prof. Ryan Wang (Northeastern University) July 30th, 2019 11:00 am – 01:00 pm
Urban resilience: human mobility and social sustainability
in the era of climate change

LECTURE
7

by dr. Francesco Cappa (LUISS Guido Carli) July 31st, 2019 09:00 am – 11:00 am
The role of big data and citizen science in innovation
practice toward environmental sustainability

LECTURE
8

by dr. Federica Rosso (Sapienza Università di Roma) July 31st, 2019 11:00 am – 1:00 pm
Environmental degradation of architectures due to climate change
Building conservation issues and retrofit strategies

LECTURES
9-10

by dr. Federica Rosso (Sapienza Università di Roma) July 26th, 2019 09:00 am – 1:00 pm
Urban Tech in NYC
Novel and traditional materials for energy retrofit and wellbeing in urban areas:
Building envelope solutions and performance analysis

LECTURE
11

by dr. Roberto Barone (Salini-Impregilo) July 31st, 2019 2:00 pm – 4:00 pm
Urban resilient infrastructure: the experience of Copenhagen Cityringen

LECTURE
12

by dr. Anna Laura Pisello and dr. Federica Rosso July 31st, 2019 4:00 pm – 6:00 pm
Presentation of final assignments

Visits to experimental fields and construction fields (on July 24th, August 1st - 2nd around NYC area) - TBD