Ph.D. programme in Civil Systems Engineering

Best practices, tools and plans for climate and energy resilience of cities

Floriana Zucaro and Carmen Guida

Credits: 3 ETCS
Number of hours: 20 frontal hours (lectures and networking activities)
Dates: see program below

Objectives: Climate change presents one of the most formidable challenges humanity has ever confronted. Among the myriad short- and long-term consequences of global warming is the alteration of urban microclimates, which in turn exacerbates energy consumption in cities. The recent energy crisis has heightened the urgency to devise solutions to mitigate the effects of a changing climate.
Despite the overwhelming scientific consensus on the multifaceted nature of this phenomenon, rooted both in the planet's natural climatic variability and the accelerated emissions of climate-altering gases stemming from human activities, current policies fall short of the ambition required to effectively address the climate crisis and foster the energy transition. Nevertheless, encouraging initiatives for positive change are emerging across the globe: several nations have committed to achieving net-zero emissions within the next 30 years; cities, corporations, and non-governmental organizations have also pledged to rise to the challenge, collaboratively exploring novel and innovative approaches to curb climate gas emissions and adapt to the consequences of climate change.
This course will introduce approaches and tools to delineate and identify strategies, actions, and interventions aimed at adapting urban environments to the evolving climate, with a particular emphasis on reducing energy consumption. Drawing upon the experiences of the past decades, we will explore a range of strategies, from international agreements to exemplary practices in territorial governance, from nature-based solutions to interventions championed by industries and private endeavors focused on safeguarding historical and cultural heritage.

Teaching materials: Lecture notes and/or indication of websites provided by the teachers.

Assessment methods: Final interview

Contact for information:
eng. Carmen Guida and Floriana Zucaro
Dipartimento di Ingegneria Civile, Edile e Ambientale
Email: carmen.guida@unina.it; floriana.zucaro@unina.it

Lectures Program

N	Date	Schedule	Duration	Topic / Teacher
1	24/01/2025	09:00 – 13:00	4 hours	- The climate-energy challenge for urban areas: strategies and theorical-operational approaches - Adaptation and mitigation plans for the resilience of cities
2	31/01/2025	09:00 – 13:00	4 hours	- Digital tools: platforms for data retrieval and best practices - Innovative tools for energy governance in urban areas
3	7/02/2025	10:00 – 13:00	3 hours	- Energy poverty and user behaviour for planning towards energy transition
4	14/02/2025	10:00 – 13:00	3 hours	- New urban planning practices for urban resilience: Italian best practices of PAESC and land desegregation
5	21/02/2025	10:00 – 13:00	3 hours	- Energy transition: opportunity or threat? The case of the Basilicata Region
6	28/02/2025	10:00 – 13:00	3 hours	- An introduction to Urban Building Energy Simulation: overview, research challenges, and practical examples

Sito Web: www.dicea.unina.it |e-mail: dicea@unina.it |Pec: dip.ing-civ-ed-amb@pec.unina.it |C.F./P.IVA:00876220633