



Politecnico  
di Torino



DRAFT PHD INTENSIVE COURSE

# Regenerative Urban Design and Adaptive Architecture

## About the course

Urban environments are at a critical juncture, facing challenges such as rapid urbanisation, climate change, and biodiversity loss. Addressing these complex issues requires a paradigm shift in how cities and buildings are designed, planned, and managed. Regenerative Urban Design and Architecture offer a transformative approach, focusing on redefining and enhancing urban areas' natural, social, and economic systems. By integrating Nature-Based Solutions (NBS) with architectural innovation and emphasizing co-design processes, this approach seeks to foster resilience, improve ecosystem services, and create vibrant, inclusive, and thriving communities.

This program aims to equip participants with the knowledge and skills needed to contribute to this paradigm shift, enabling them to design urban and architectural solutions that mitigate environmental harm, actively regenerate ecosystems, and enhance community well-being. This two-day program provides a comprehensive introduction to regenerative urban design and architecture principles and practices through seminars, case study analyses, and hands-on workshops. Participants will explore innovative design strategies, understand the integration of NBS in urban and architectural contexts, and experience the power of co-design in fostering collaborative and sustainable solutions.

The intensive course combines theoretical lessons with a hands-on workshop structured into two key phases. The first phase consists of lecture sessions ("lecture pills") that provide foundational knowledge and essential tools for analysis and design. Immediately following, the second phase focuses on practical application, where participants implement what was introduced in the initial stage. The fast-paced rhythm of the course acts as a catalyst, encouraging participants to rapidly identify strategies

and ideas. In the final segment of the course, each group develops a conceptual design framework ("meta-project") based on their work. The course offers a unique opportunity to engage with cutting-edge ideas and collaborate with experts and peers in shaping the cities and buildings of the future.

### **About Regenerative Urban Design**

Regenerative urban design is a holistic approach to urban design and architecture that seeks to restore, enhance, and sustain a city's natural, social, and economic systems. Unlike traditional sustainable design, which focuses on minimising harm or maintaining the status quo, regenerative design actively improves the health of urban ecosystems, fosters biodiversity, and enhances community well-being. It integrates Nature-Based Solutions (NBS) with innovative design and governance strategies to create cities that adapt to challenges like climate change and thrive in the face of them.

This approach is crucial in addressing the growing pressures of urbanisation, climate instability, resource depletion and carbon sequestration. Regenerative urban design moves beyond mitigation to embrace adaptive reuse and restoration based on reusing the existing, upgrading systems, materials and energy efficiency, ensuring that urban environments contribute to the planet's ecological balance while enhancing the quality of life for their inhabitants. Fostering natural systems offers a pathway to resilient, inclusive, and future-proof cities on the way to reaching carbon neutrality.

### **Course Objectives**

- Understand the theoretical principles of regenerative urban design and regenerative architecture.
- Explore the role of Nature-Based Solutions (NBS) in reimagining urban spaces to foster ecological, social, and economic resilience.
- Learn how to incorporate co-design methodologies to engage communities, stakeholders, and institutions in planning.
- Acquire practical skills in context analysis, ecosystem service mapping, and the integration of NBS at urban and architectural scales.
- Discover strategies for adaptive reuse of existing buildings and infrastructures as a regenerative approach to reduce resource consumption and preserve cultural heritage.

**Dates and Duration:** 3 days (17 h\*), from February 18 (starting at 13h) to February 20 (finishing mid-afternoon). Detailed program is given below.

\*The course has a total of 17 contact hours, and we will provide a certificate for its completion. Please note that we cannot guarantee the validation of this certificate in the form of credits at your home institution. It is the responsibility of the participants to check whether they can earn credits from this course.

**Location:** The course will be in person at the TU Delft Faculty of Architecture and the Built Environment. Address: Julianalaan 134 2628 BL Delft. Online attendance is not possible.

**Target Participants:** Doctoral students in Architecture, Urban Planning, Civil-Environmental Engineering, Landscape Architecture, and related fields. Other researchers are also welcome, as well as second-year Master Students.

### **Teaching team POLITO**

Roberta Ingaramo

Maicol Negrello

### **Teaching team TU DELFT**

Juliana Gonçalves

Irene Luque Martin

Claudiu Forgaci

## **Program**

### **Day 1\_Tuesday 18 February, 13.00 – 17.30 (4,5h)**

Room Z | TU Delft Faculty of Architecture and the Built Environment

Address: Julianalaan 134 2628 BL Delft

#### **13:00 – 13:30 | Welcome and Introduction**

- Participant registration
- Presentation of the course, objectives, and expected outcomes
- Creation of small, interdisciplinary teams

#### **13:30 – 15:15 | Lectures “Regen Toolkit: Theoretical Foundations and Cases Study”**

- *13h30-13h45 Urban Regen Team, Overview of regenerative urban design and architecture:* The role of architecture in urban regeneration: from individual buildings to city-wide ecosystems
- *13h45-14h15 Roberta Ingaramo, Adaptive reuse as a regenerative strategy and approach:* revitalizing existing structures and sites to minimize environmental impact and enhance urban legacy (20min lecture +10min Q&A)
- *14h15-14h45 Maicol Negrello, Nature-based solutions as element of design:* definitions, types, and their potential in urban contexts (20min lecture +10min Q&A)
- *14h45-15h15 TBC, Co-design as a design tool:* integrating local communities and stakeholders for collaborative regeneration (20min lecture +10min Q&A)

**15:15 – 15:30 | Coffee break**

**15:30 – 17:30 | “HOW TO: Tools and Methodologies for Assessment” (Lecture pills + WS design Fase 0)**

- 10 min - Explanation of the goals and output and assignment of an urban case study area (a district or neighbourhood)
- **15h40-16h10 Lecture pill 30 min\_ How to analyse urban context complexity** (with Irene Luque Martin, Urban Design Section, TU Delft)
- **Workshop time (1,5 h):** Identification of primary challenges and regeneration opportunities in the site, Built tissue and morphology, Green and blue infrastructure, Connections and mobility, Vulnerability and risks, Identify the theme and the program for the area

**Day 2\_ Wednesday 19 February, 9:00 -18:00 (8h)**

Room BG.Oost.490 | TU Delft Faculty of Architecture and the Built Environment

Address: Julianalaan 134 2628 BL Delft

**Regenerative Design Approach and Co-Design (Lecture pills + WS design fase1)**

**9:00 – 11:00 | Regenerative Design Approach 1**

- **Lecture pill 30 min\_ Identifying relevant stakeholders and co-design methodologies in the regeneration process** (with Juliana Goncalves, Spatial Planning and Strategy Section, TU Delft)
- **Workshop time (1,5 h): Incorporating co-design process and adaptive reuse solutions** into the regenerative design approach

**11:00 – 13:00 | Regenerative Design Approach 2 (Lecture pills + WS design fase 2)**

- **Lecture pill 30 min\_ Tools and resilience indicators for urban regeneration evaluation** (with Claudiu Forgaci, Urban Design Section, TU Delft)
- **Workshop time (1,5 h): Integrating Nature-Based Solutions** into architecture and public space design and individuate indicators for regen evaluation.

**13:00 – 14:00 | Lunch Break**

**14:00 – 17:00 | Design Workshop Fase 3**

Each Team develop Creating sketches, diagrams, and conceptual maps for:

- **URBAN**\_ regenerative design concepts for the selected area (conceptual masterplan)
- **ARCHITECTURE**\_ Integration of regenerative principles into architectural and urban proposals
- **ENVIRONMENT**\_ Creating a nature-positive environment through NBS

**17:00 – 18:00 | Pecha Kucha of first findings and review**

**Day 3\_ Thursday 20 February, 8:30 – 13:00 (4,5h)**

Room Z | TU Delft Faculty of Architecture and the Built Environment

Address: Julianalaan 134 2628 BL Delft

**8:30 – 10:30 | Finalisations Workshop outputs Fase 4**

- Finalization of the design concepts
- Preparation of the final presentation Pecha Kucha

**10:30 – 11:00 Coffee break**

**11:00 – 13:00 | Intensive Course Closing**

- **Final Pecha Kucha Presentation:** each group presents their regenerative design concept (10 minutes per group)
- **Open debate**