



# Urban Futures in Dialogue: International Perspectives for Cagliari



To register for the seminar series, participants are kindly requested to send an email to Chiara Garau at [cgarau@unica.it](mailto:cgarau@unica.it) and to complete the registration form available at the following link: <https://forms.gle/J9SKAuNYbUEKtmB56>

## International Visiting Lecturers in Cagliari

The seminar series will be held in hybrid mode, allowing both in-person and online participation, and will be delivered in English. During the discussion sessions, the lecturers involved in the seminar series will actively contribute to the debate, supporting interdisciplinary exchange and the development of shared research perspectives. The seminar series is open to students, PhD candidates, researchers, and academic staff. In particular, students enrolled in the Environmental and Land Engineering (IAT - Ingegneria per l'Ambiente e il Territorio) and Environmental Engineering for Sustainable Development (IASS - Ingegneria Ambientale per lo Sviluppo Sostenibile) degree programmes who attend the seminar series will be awarded 1 ECTS, according to the recognition procedures established by the relevant degree programmes.

### Day 1

3 June – Piazza d'Armi 2, Cagliari

**Smart Mobility, Digital Twins and Sustainable Urban Planning.** (Chiara Garau & Maksymilian Mądział)

Duration: 5 hours

### Day 2

4 June – Piazza d'Armi 2, Cagliari

**Digital Twins, Smart Tourism Governance and Fragile Territories.** (Chiara Garau, Luciano Alessandro Ipsaro Palesi & Tiziana Campisi)

Duration: 7  
hours

### Day 3

16 June – Cagliari (to be confirmed)

**Heritage Preservation, Development Rights, 3D Urban Governance.** (Chiara Garau & Dionysia-Georgia Ch. Perperidou)

Duration: 5 hours

### Day 4

17 June – Cagliari (to be confirmed)

**Learning Spaces and the City as an Educational Ecosystem and Final Synthesis.** (Chiara Garau & Celina Salvador-Garcia )

Duration: 8 hours

#### Chiara Garau

Associate Professor of Urban and Regional Planning at the Department of Civil, Environmental Engineering and Architecture of the University of Cagliari

#### Tiziana Campisi

Associate Professor of Transport at the University of Enna Kore (Department of Engineering and Architecture).

#### Celina Salvador Garcia

Assistant professor at the Department of Pedagogy and Didactics of Social Sciences, Language and Literature in the Area of Didactics and School Organization at the Universitat Jaume I (Spain).

#### Luciano Alessandro Ipsaro Palesi

Research Fellow, DINFO, Department of Information Engineering, University of Florence, Italy

#### Maksymilian Mądział

Associate Professor, Faculty of Mechanical Engineering and Aeronautics, Rzeszow University of Technology, 35-959 Rzeszow, Poland.

#### Dionysia - Georgia Ch. Perperidou

Assistant Professor, Department of Surveying and Geoinformatics Engineering, University of West Attica



## General Introduction

The UniCA seminar series brings international visiting lecturers to Cagliari to discuss contemporary challenges in urban and regional transformation, using the city of Cagliari as a shared field for critical reflection, comparative dialogue, and research-oriented debate.

Cagliari represents a particularly meaningful context for this exchange: it is a coastal city, a metropolitan node, a tourist destination, an educational environment, and a historically stratified urban system. Its spatial, social, environmental, and cultural complexity makes it an ideal setting to reflect on sustainable mobility, digital twins, smart tourism governance, learning environments, heritage preservation, fragile territories, accessibility, and innovative urban planning tools. The seminar series uses the city as a starting point for open questions: how can a coastal and metropolitan city address sustainable mobility, tourism pressure, educational environments, heritage protection, digital transition, fragile territories, and spatial justice? How can international research perspectives help frame new methodological and operational pathways for Cagliari and comparable Mediterranean urban contexts? The seminars aim to create an interdisciplinary dialogue between international scholars and the University of Cagliari, connecting advanced research methods with debate-oriented questions on urban and territorial transformation. Each seminar will be followed by a structured discussion of results and research perspectives, intended to identify methodological implications, comparative insights, possible joint research trajectories, and future collaborations.

The programme includes 25 hours of academic activities, combining lectures, structured discussions, methodological exchange, debate-oriented sessions, and a final synthesis focused on the research questions emerging from the seminar series.

## Day 1

3 June – Piazza d'Armi 2, Cagliari

### Smart Mobility, Digital Twins and Sustainable Urban Planning

Duration: 5 hours

Time	Activity
9:30 – 10:15	Opening of the day and welcome remarks
10:15 – 10:30	Introduction by Chiara Garau: debate-opening questions on Cagliari as a Mediterranean laboratory for sustainable mobility and data-driven urban planning
10:30 – 12:30	Seminar by Maksymilian Mądział <i>From Smart Mobility Indicators to Digital Twins: Data-Driven Support for Sustainable Urban Planning</i>
12:30 – 14:30	Discussion of results and research perspectives

### Seminar focus

The invited lecturer will introduce the transition from smart mobility indicators to digital twins as a key step in the development of data-driven decision-support tools for sustainable urban planning. The seminar will address how mobility systems, traffic operations, emissions, energy use, and policy interventions can be analysed through dynamic and integrated approaches rather than through static indicators alone.

**Abstract:** Sustainable urban planning increasingly requires tools able to capture the complexity of mobility systems and their environmental impacts. While smart mobility indicators are widely used in policy and planning, many conventional approaches remain static and offer limited support for understanding the dynamic relationships among traffic operations, emissions, energy use, and policy interventions. This presentation discusses the transition from indicator-based assessment toward data-driven decision-support frameworks for sustainable urban planning. Drawing on research combining real-world emissions measurements, traffic microsimulation, artificial intelligence, and digital twin approaches, the presentation shows how experimental data and simulation models can support urban mobility planning at different scales. Selected examples will address intersection performance, emission modelling, SUMP, low-emission strategies, and emerging digital twins for traffic management. Particular attention will be given to the integration of transport engineering data with planning-oriented frameworks to support more effective, evidence-based, and resilient urban mobility policies.

## Day 2

4 June - Piazza d'Armi 2, Cagliari

**Digital Twins, Smart Tourism Governance and Fragile Territories**  
Duration: 7 hours

Time	Activity
9:30 - 10:15	<b>Opening of the day and welcome remarks</b>
10:15 - 10:30	<b>Introduction by Chiara Garau: debate-opening questions on Cagliari, tourism governance, fragile territories and metropolitan connections</b>
10:30 - 12:00	<b>Seminar by Luciano Alessandro Ipsaro Palesi</b> <i>Digital Twins and Smart City Platforms for Sustainable Tourism Governance</i>
15:00 - 16:30	<b>Seminar by Tiziana Campisi</b> <i>Connecting Fragile Territories: Last-Mile Strategies and Hybrid Spatial Regeneration in Inland Areas</i>
16:30 - 17:00	<b>Joint discussion of results and research perspectives</b>

### Seminar focus

The first invited lecturer (Luciano Alessandro Ipsaro Palesi) will introduce the role of digital twins and smart city platforms as operational tools for sustainable tourism governance. The seminar will examine how urban data, sensors, Key Performance Indicators, artificial intelligence models, forecasting, anomaly detection, and visual analytics can support the monitoring of tourism flows and the management of urban pressure in art cities and popular destinations.

The second invited lecturer (Tiziana Campisi) will introduce the challenges of socio-economic decline, geographical isolation, weak demand, and logistical marginality in inland areas and fragile territories. The seminar will discuss how the Smart Village paradigm can support new development trajectories by integrating energy, ICT, transport, last-mile logistics, and spatial regeneration.

**Abstract:** Socio-economic decline and geographical isolation represent the main structural challenges for inland areas and fragile territories. In recent years, the Smart Village paradigm has outlined new development trajectories, integrating energy, ICT, and transport to revitalize local communities. However, the efficiency of last-mile logistics in contexts characterized by low population density and weak demand remains a critical bottleneck due to infrastructural inefficiencies and settlement dispersion. This work defines a strategic framework and a set of planning guidelines aimed at overcoming the logistical marginality of these territories. Utilizing advanced Web-GIS geospatial mapping and analysis tools, the methodology proposes the census and classification of abandoned real estate assets and urban voids, targeting their optimal localization and conversion into multifunctional micro-hubs with high social value. This "hybrid spatial regeneration" approach is combined with the introduction of innovative Logistics as a Service (LaaS) models and shared transport solutions. The synergetic integration of flexible transport demand management and spatial reuse not only reduces shipping costs and environmental impacts but also mitigates the social exclusion of vulnerable populations. The results provide a highly replicable decision-making and operational model capable of supporting public administrations and private operators in defining innovative strategies to transform marginal villages into resilient, connected, and fully sustainable territorial nodes.

**Abstract:** Art cities and popular tourist destinations today face two often conflicting challenges: enhancing the visitor experience while safeguarding residents' quality of life, cultural heritage, and environmental balance. In this context, the urban Digital Twin becomes a strategic tool for transforming different data into actionable insights, simulations, forecasts, and decision support system. The proposed approach take advantage of Snap4City as a technological environment that connects data from sensors, Key Performance indicators within an interactive real-time representation of the city. Through artificial intelligence models (forecasting, anomaly detection, etc) and visualization tools, the Digital Twin supports the monitoring of urban spaces, the detection of overcrowding conditions, the evaluation of alternative scenarios and the use of what-if analysis to assess actions to redistribute tourist flows. The presentation demonstrates how the Digital Twin can transform tourism flow monitoring into a data-driven operational process. By combining distributed data sources, predictive algorithms, and visual analytics it supports impact, infrastructure optimization, and what-if analysis, providing public authorities and stakeholders with measurable tools for sustainable tourism management.



### Day 3

16 June – Cagliari (to be confirmed)

#### Heritage Preservation, Development Rights, 3D Urban Governance

Duration: 5 hours

#### Seminar focus

The invited lecturer will introduce a three-dimensional approach to the legal classification, visualization, and representation of Development Rights and Transfer of Development Rights in historic urban contexts. Starting from the Athens Historic Center, the seminar will discuss how ancient monuments, neoclassical landmarks, listed buildings, modern multi-storey buildings, and view corridors coexist within a dense and complex urban landscape.

Time	Activity
9:30 – 10:15	Opening of the day and welcome remarks
10:15 – 10:30	Introduction by Chiara Garau: Cagliari and the challenge of governing historic urban landscapes
10:30 – 12:30	Seminar by Dionysia-Georgia Ch. Perperidou <i>Trading Heights, Saving Heritage: A 3D Approach to TDRs in the Athens Historic Center</i>
12:30 – 14:30	Discussion of results and research perspectives

**Abstract:** Athens Historic center holds more than 3,000 years of urban memory, and ancient monuments, neoclassical landmarks, and modern multi-story buildings co-exist in a dense and complex urban landscape. Since the 1975 Greek Constitution sets cultural heritage protection as a constitutional mandate, strict building regulations have restricted the development rights (DRs) of private owners – particularly of listed buildings – without ensuring fair compensation, leading to widespread abandonment and decay of the area of the Historic Center. The recent reintroduction of Transfer of Development Rights (Law 4495/2017, amended by Law 4759/2020) opens new opportunities to bridge heritage protection and preservation with property rights exercise, provided that DRs are transferable, thus are turned into TDRs, which prerequisites their accurate definition in three dimensions. The session presents a methodological framework for the legal classification, 3D visualization, and representation of DRs and TDRs, applied to urban blocks across the Athens Historic Center. Comparative analysis reveals the extraordinary heterogeneity of the area – varied construction periods, heights, listed-building status, and view corridors toward the Acropolis – and exposes systematic imbalances between "positive" and "negative" DRs. The findings show that integrating 3D spatial attributes (volume, height, visibility) is essential for an equitable, transparent, and operational TDR scheme, for protecting cultural heritage on the one hand and protecting private property rights on the other, offering insights transferable to other Mediterranean historic cities.



**Day 4**  
**17 June – Cagliari**

**Learning Spaces and the City as an Educational Ecosystem and Final Synthesis**

Duration: 8 hours

**Seminar focus**

The invited lecturer will introduce the evolution of learning spaces from traditional classroom-based models toward more dynamic, inclusive, flexible, and relational educational environments. The seminar will explore how schools can be understood not only as buildings, but as spatial, social, material, and pedagogical ecosystems connected to the wider community.

Time	Activity
9:00 – 9:15 9:15 – 9:45	<b>Opening of the day and welcome remarks</b> Alessandra Carucci, Vice-Rector for International Affairs
9:45 – 10:00	<b>Introduction by Chiara Garau: debate-opening questions on Cagliari as a learning city and inclusive urban environment</b>
10:00 – 12:00	<b>Seminar by Celina Salvador-Garcia</b> <i>Creating Learning Spaces in the School and Beyond</i>
12:00 – 14:00	<b>Discussion of results and research perspectives</b>
15:00 – 16:30	<b>Final Synthesis and Cross-Seminar Research Perspectives</b> <i>Cross-seminar synthesis and Methodological comparison</i>
16:30 – 17:00	<b>Final discussion and closing remarks</b>

**Abstract:** Traditional educational models are increasingly being challenged by the need for more dynamic, inclusive, and flexible environments. This seminar explores the evolution of "learning spaces," moving away from the single classroom model toward a more holistic ecosystem that encompasses the entire school and the community beyond its walls. Furthermore, it moves beyond viewing space as a passive container for education, instead exploring "learning spaces" as vibrant, relational environments. We will examine how the entanglement of physical design, material agency, and social connectivity shapes student engagement and pedagogical outcomes. By exploring how diverse learning perspectives may shape indoor and outdoor environments, this session shares practical strategies to transform spaces into inclusive hubs of discovery that promote learning. Participants will reflect on how learning spaces vary depending on the learning approach they support and reflect upon how a sociomaterial perspective might reveal the power of spaces as opportunities for meaningful educational growth.