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TAGS: Sustainability, Urban planning, Digital twin



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Methods and tools for an intelligent city knowledge

The holder of this badge has attended the course "Methods and tools for an intelligent city knowledge" organized by the University Basilicata as part of the "Competenze trasversali in Unibas" Project.

The module will provide the students with specific competences aimed at building the kind of city knowledge which is necessary for supporting the urban sustainability governance in the frame of complex tools such as the Urban Digital Twins. For its characteristics, the module is open to all the interested students also from curricula not necessarily pertaining to architectural or urban fields. The module is divided in two parts, a theoretical one and a laboratory one, with a total duration of 30 h. The theoretical part (for a total of 15 h) will explore the following themes: comprehension of the urban syntax, of the different thematic layers composing it and of their interactions; guidelines for the development of sustainable cities, also in relation to the requirements of the Sustainable Development Goals (SDGs) set by the UN Agenda 2030; survey of international case studies of Urban Digital Twins; fundamentals of urban governance: definition of the different phases (objectives, implementation, management) and organization of the urban planning processes; principles of the Strategic Environmental Evaluation; critical mapping for the development of a governance-oriented knowledge of the thematic layers of a city; civic participation and community mapping as instruments for exploring the knowledge, the exigencies and the perspectives as developed by the local socioeconomic contexts through their direct life experiences; synthesis of a complex knowledge through the qualitative analysis of the interconnections between the thematic layers and related information, and the integration with participatory data; tools and solutions for the digitalization of the urban knowledge base. The theoretical part is completed by a focus on one of the main open research horizons in the urban sciences, that is development of urban strategies which can rely on a complex urban knowledge drawing on different data sources, as well as on the availability of quali-quantitative methods aimed at defining specific objective functions in the service of multi-disciplinary optimization as enabled by the Digital Twin, so to support the urban governance towards an evidence-based and data-driven decision making. The laboratory part of the module (for a total of 15 h) proposes the involvement of the students within the research and experimentation pilot activities for the construction of the Digital Twin of Matera, carried out by CNR in the frame of the House of Emerging Technologies; this will allow them to gain a practical experience of the concepts exposed according to a "hands-on" approach, by contributing in first person to the implementation of an innovation process aimed at building an organic and governance-oriented knowledge of the city. The teachers of this module will be experts from CNR (National Research Council) as well as from INU (National Urban planning Institute).



Skills

The owner of this badge proved to possess the following competencies:

- maturing a collaborative vision on the relations among the various disciplines dealing with cities, and a capacity of interdisciplinary understanding of the urban contexts;
- actively contributing to urban analysis and mapping campaigns aimed at understanding the critical factors for the pursuit of urban sustainability;
- individuating the most relevant correlations among the various dynamics characterizing the life and evolution of cities;
- capitalizing on the available informative sources according to a "problem setting" approach;
- combining the different data sources for building integrated and complex analytical frames, also by basing on multi-criteria synthetic indicators;
- recognizing the key-elements of participatory processes aimed at nurturing a city knowledge able to include and understand subjective experiences and viewpoints;
- exploiting the potentialities of digital enabling technologies for building knowledge bases on the city that are intelligent, integrated, and supportive for the urban governance.

The owner of this badge proved to have matured the following soft skills:

- being proactive;
- taking responsibilities;
- addressing challenges in a positive way;
- analytical thinking;
- being adaptable to changes;
- elaborating spatial information;
- team working;
- individuating problems, establishing relations and hierarchies among them;
- critical understanding, interpreting and synthesizing of new and complex information coming from different sources;
- carrying out research beyond the disciplinary and functional borders.

The owner of this badge proved to have gained the following knowledge:

- understanding of the different thematic layers which compose the urban organism, and of their logical, conceptual and functional interconnections;
- overview on methods, objectives and practices of urban sustainability;
- starting knowledge on the theory and practice of Urban Digital Twin;
- fundamentals of urban governance;
- principles on the Strategic Environmental Assessment (VAS);
- setting up critical analyses and mapping on the thematic layers of a city;
- theoretic and practical knowledge on civic participation and community mapping as tools for building the city knowledge;
- qualitative analysis of the interconnections among the thematic maps and of their integration with the participatory data for building an organic city knowledge;
- solutions and tools for the digitalization of the city knowledge base;
- basic knowledge on the multi-criteria approaches necessary for evolving the qualitative knowledge of the city into a quali-quantitative one, able to support an urban governance inspired by an "evidence-based" and "data-driven" approach.

Criteria

The Badge is awarded upon attendance of the course "Methods and tools for an intelligent city knowledge". The percentage of attendance cannot be less than 75% of the entire duration. At the end of the course, participants must pass the final.



Issued by University of Basilicata

The University of Basilicata is the leading University of the Basilicata region, in the Southern part of Italy. Since 2012, according to the new University statute and rules of procedure, ex D.R. n. 88/2012, the University of Basilicata is organized through six primary structures (precisely four departments and two schools) in which the functions and the personnel of the pre-existing twelve departments and eight faculties have been re-addressed. Degree programs range from the Humanities, to architecture, archeology, education, economics and management, as well as to the STEM disciplines (hard sciences, agriculture, engineering, computer sciences). Such degree programs are effectively connected to the research, training and third mission activities developed by the primary structures. University of Basilicata counts about 7000 students, and is based in the cities of Potenza and Matera.



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