



Issued by [University of Basilicata](#)

SINCE

TAGS: [3D Modeling](#), [3D Scanning](#), [Digital twin](#)



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## 3D Urban Models: data acquisition, modeling, and prospects of urban planning and monitoring

The holder of this badge has attended the course "**3D Urban Models: data acquisition, modeling, and prospects of urban planning and monitoring**" organized by the University Basilicata as part of the "**Competenze trasversali in Unibas**" Project.

The course titled "3D Urban Models: data acquisition, modeling, and prospects of urban planning and monitoring" is part of the project Casa Delle Tecnologie Emergenti Matera, coordinated by the CNR Department of Engineering, ICT and Technology for Energy and Transport (DIITET), in partnership with Unibas.

The training course is intended to deepen both theory and practice related to 3D digital representation of urban contexts and to their exploitation for informative visualization of cities, the evaluation of different solutions in urban planning, monitoring and forecasting of environmental and social phenomena.

The course will take 30 hours and will focus on urban data acquisition and 3D digital model reconstruction, step by step along the digitalization pipeline, starting from the design of data acquisition surveys to data post-processing, and generation and visualization of a georeferenced 3D model. The course will provide theoretical background to better understand methods for generating 3D digital models of urban contexts: data structures and processing of geometric datasets, analysis, and annotation of 3D models for different applications, including urban intelligence and development of urban digital twins. The training course aims to provide tools and knowledge necessary to understand methods to generate 3D models of urban contexts. Through a sequence of theoretical sessions and following lab experience, the course will provide the background to acquire skills and independence in following technological developments and interacting with professional and industrial users working on related topics.

Lab experiences will provide the possibility to put into practice the acquired theoretical knowledge by following the digitalization pipeline of an urban point of interest by means of a mobile laser scanner and state-of-the-art methods for 3D model generation, seeing first-hand possible issues associated with the design and success of such a pipeline.

At the end of this course the student will acquire knowledge and skills for further deepening the related topics and become a professional figure having the ability to exploit modern and advanced technologies for 3D model generation with the final aim to monitor and visualize the current status of urban contexts, and simulate how possible modifications to the context itself might affect both environmental and social status.



### Skills

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

- Capacity of evaluating existing technologies and choosing the best solution to scan generate a 3D model of a specific real contexts of interest
- Design of scanning surveys with the final aim of generating 3D models
- Data acquisition of urban contexts by means of 3D laser scanning
- 3D modeling and digitalization of real environments
- Semantic annotation of 3D models
- Visualization of annotated 3D models

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

- Capacity of evaluating the urban and social context where data acquisition will take place
- Capacity of design and optimize the digitalization pipeline to conclude the process on time
- Capacity of maximize the teamwork to achieve the final goal

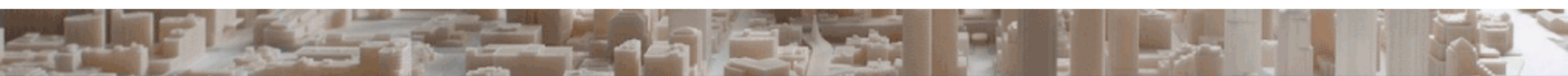
The owner of this Badge proved to have gained the following knowledge:

- Methods for 3D digital representation of urban contexts
- Method for informative visualization of cities
- Methods and technologies to evaluate different solutions in urban planning
- Methods and technologies to monitor and forecast environmental and social phenomena into urban contexts

### Criteria

The Badge is awarded upon the attendance of the course "**3D Urban Models: data acquisition, modeling, and prospects of urban planning and monitoring**". The attending percentage cannot be inferior to 70% of the planned activities.

At the end of the course, students must succeed in a final evaluation test.



**Modelli urbani 3D: acquisizione, modellazione e prospettive per pianificazione e monitoraggio urbano**

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### 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.



### Badge Numbers



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-

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-

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-

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