INNOVATIVE TECHNIQUES FOR THE EXPANSION OF EXISTING BUILDINGS

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Program of the course:

The need to reduce the environmental impact in terms of CO2 emissions and to reduce soil consumption have made the topic of the refurbishment of the 20th century building heritage of absolute centrality. Currently, the topic of refurbishment is the field with the greatest potential for the entire world of construction. In fact, if for a long-time demolition was considered as the only possible solution - because it was considered cheaper - the vastness of the problem and the heterogeneity of the buildings required a deeper analysis and a new range of available interventions: from the re-functionalization of the building to the conservative refurbishment, from its energy requalification to structural improvement. Among the techniques and materials for the high-tech design that will be addressed, are lateral addition and upwards elements. The addition of volumes or of a floor to the existing building allows, on the one hand, to respond to a need for housing without further consumption of land, while, on the other hand, the increase in volume can become the driving force for economic redevelopment for a sustainable recovery of the entire building, from an architectural, energy, urban and social point of view, as it would allow:

• to be able to use accommodation during the construction site, without forcing the inhabitants to move;

• to be able to use a high-tech upwards volume to provide energy to the entire residential building;

• to be able to have an increase in the building stock without land consumption

Main topics of the course:

During the course, the topic of the lateral or upward volumetric increase to be carried out with light elements will be explored in order to guarantee architectural, energy, acoustic and structural performance as well as, through correct modularity, to reduce execution times, with potential economic advantages.

Reference texts:

- Grecchi, M., & Malighetti, L. E. 1. (2008). Ripensare il costruito. Santarcangelo
  di Romagna:Maggioli.
- Sassi, P. (2008). Strategie per l'architettura sostenibile. Milano: Ambiente.
- Imperadori, M. (2001). Costruire sul costruito. Roma: Carocci.

Correlation with other courses:

Structural Engineering; Technical Architecture and Construction Production; History of Architecture; Architectural Design; Urban Design