

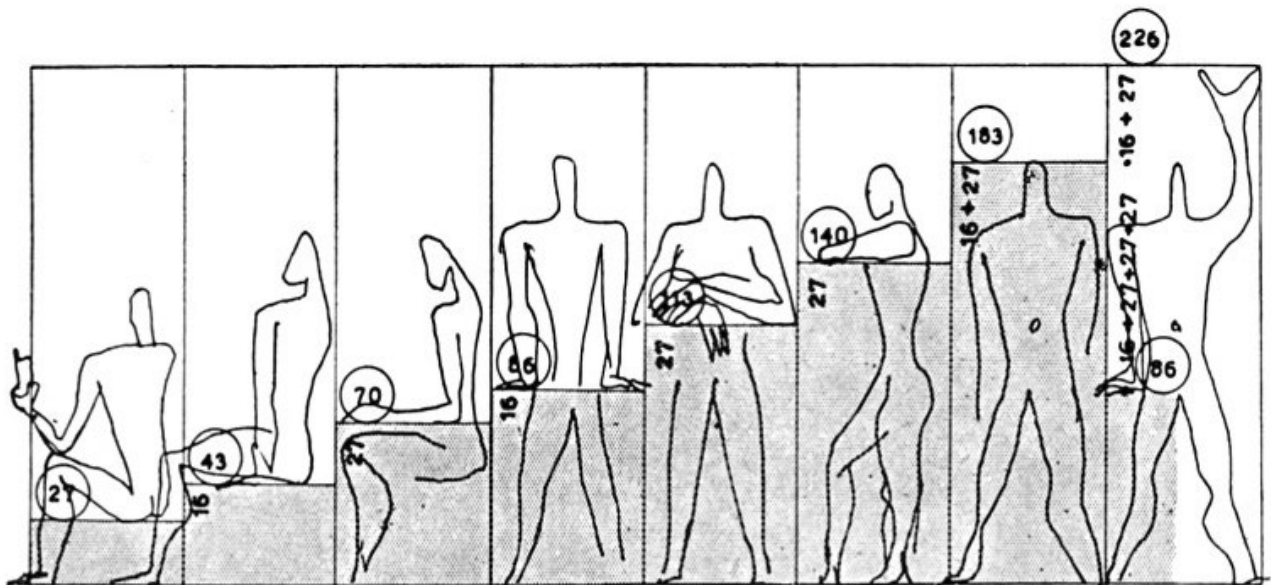
SAPIENZA UNIVERSITY OF ROME

FACULTY OF CIVIL AND INDUSTRIAL ENGINEERING

Sustainable Building Engineering Bachelor's Degree
BUILDING DESIGN FOR SUSTAINABLE ARCHITECTURE
ARCHITECTURAL DESIGN

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COURSE PROGRAMME (A.Y. 2023-24)

Educational goals (purposes)

This course is based on the theoretical statement that architecture is first of all conception, then organization and construction of the space for human being, within a certain historical, social and cultural context; more precisely, it may be considered as a coherent and organic configuration (“composition”) of those elements that define the shape, the dimension, yet mostly the quality and the character of a set of clearly structured spaces, suitable for people life and activities; in other words, spaces that are in a mutual, intentionally established relation of meaning, even before that in a functional, geometric or morphological relation; spaces that are able to transcend their practical purpose, so to express the kahnian concept of ‘order’ that comes first and leads their ‘thoughtful’ making. Therefore, architecture always creates a complex system of relations between spaces; that relational system not only describes the plot of connections between the functions which are inside, but, at the same time, establishes and measures the trim, the opening and the plot of connections (physical, visual or metaphorical) between those functions and the city or the nature outside.

Architectural design is both a logical-deductive and an artistic-intuitive process, which aims at reducing to a balanced, harmonic and necessary - yet mostly expressive - synthesis those often-divergent needs related to its three main (Vitruvian) components: *firmitas* (strength), *utilitas* (utility) and *venustas* (beauty).

On the other hand, architectural design is also intended as an instrument of knowledge, of patient research and experience, through which investigating and bringing out the hidden potential of a place, its historical and environmental values, moreover proposing a representation of contemporary condition, a possible reading of the spirit of our time.

Designing a work of architecture, therefore, is at the same time an analytical, critical and artistic act; it means in any case to relate to the existing environment, to the process of transformation of a territory, but also to the process of evolution and ripening of ideas in a certain historical period or cultural context. Each new building, each new architectural arrangement, even if small in size, changes the environment, giving it a new meaning; essentially, it expresses a critical evaluation about it, it selects the tracks, it measures the spaces, giving back a different order - a different identity - and establishing unexpected relations or recovering disregarded relations with the other architectures, with the city or the landscape.

Starting from these conceptual statements, this course aims at conveying the basic disciplinary and methodological knowledges of architectural design, making students able to analyze and understand the works of architecture designed by some of the most important modern and contemporary architects, but also to learn the meaning of some central issues in the architectural design process, in order to grapple in the design of a small building.

Given the essential value of the design training, the project to be developed during the semester gains the meaning of an effective teaching tool, also in order to explain general issues of the discipline such as: the concept of ‘scale’ in architecture; the relation between architecture and environment; the relation between inside and outside spaces; the composition of solids and voids; the coherence between architectural design and construction techniques; the perfect matching between the architectural shape, the articulation of spaces, the functional program and the load-bearing structure; the reference to a typological layout; the use of geometric or numerical modulation as a tool to control and size architectural shape. Moreover, learning these basic notions includes, as a further aim of this course, the achievement of an individual critical skill, essential to allow developing a personal approach to architecture.

Lessons

The different topics are divided in two groups of six lessons: the first group focuses on some key issues regarding architectural design, strictly related to the exercise to be carried out during the semester; the second group focuses on some ‘masters’ of twentieth century modern architecture in Europe and in the United States of America.

First cycle of lessons:

- 1) The Inside-Outside Relation
- 2) The Typological Approach_1: Spaces Arranged Along a Main Axis
- 3) The Typological Approach_2: Spaces Arranged Around a Central Courtyard
- 4) The Typological Approach_3: Spaces Arranged According to a Network of Hallways Crossing Each Other
- 5) The Modular Approach: Spaces Arranged in Repeated Spatial Units
- 6) The Volumetric Approach: Shaping and Assembling Volumes

Second cycle of lessons:

- 1) Frank Lloyd Wright | Organic Architecture. The Centrifugal Explosion of the Internal Space (part 1)
- 2) Frank Lloyd Wright | Organic Architecture. The Centrifugal Explosion of the Internal Space (part 2)
- 3) Le Corbusier | The ‘Promenade Architecturale’ as a Dynamic Use of the Space, from Purism to Brutalism (part 1)
- 4) Le Corbusier | The ‘Promenade Architecturale’ as a Dynamic Use of the Space, from Purism to Brutalism (part 2)
- 5) Ludwig Mies van der Rohe | Architecture Comes Out from Technique: Unstructured Space and ‘Almost Nothing’ Poetics (part 1)
- 6) Ludwig Mies van der Rohe | Architecture Comes Out from Technique: Unstructured Space and ‘Almost Nothing’ Poetics (part 2)

Design lab

The design exercise is the architectural project of a small nursery and primary school building in Lucca, taken from the #scuoleinnovative design competition launched in 2016; it will be developed during the design labs, through a set of drawings, so to make clear, on one hand, the quality of the relation between the building and the urban surroundings and, on the other hand, the architectural definition of the building in its formal, functional and technical issues, with particular reference to the relation between its spaces and the overall architectural shape, its spaces and the functional program, its spaces and the load-bearing structure. All students will have to submit their project at least two times in the semester, therefore allowing the teacher to do an intermediate and a final check; these mandatory submissions are mainly aimed at leading each student towards the most proper and effective proposal.

Requested drawings, examination mode and evaluation criteria

The final exam focuses, first of all, on the contents taught in the second cycle of lessons - besides one book chosen from points "b", "c" or "d" within the recommended bibliography - then on the evaluation of the project developed in the design labs and presented through the following drawings, set in two A1 sheets (59,4 x 84,1 cm) or in as many A3 sheets (29,7 x 42 cm) as needed:

- the overall plan (with shadows) of the coverings of the building in its urban surroundings, included external arrangements (1:500)
- detailed plans of each useful level with its main furniture and its load-bearing framework (1:200)
- at least two detailed cross-sections (1:200)
- four elevations (with shadows and textures of the cladding materials) (1:200)
- three-dimensional images (axonometric views, axonometric sections, perspective views or even photo insertions) processed with techniques chosen by each student

Project evaluation criteria:

- consistency of the architectural concept, expressed through an organic configuration of the whole and its different parts
- ability to establish meaningful and careful relations with the urban or natural context
- quality and richness of the spaces, linked to an effective arrangement of the functional program
- constructive realism, aimed at making formal and distributive issues coherent with those structural and technical, especially with respect to the passive solutions for a sustainable architecture
- quality, care and precision of the drawings
- autonomy and awareness shown in the conception and development of the design proposal

Recommended bibliography

- a) In order to frame twentieth century architectural history:

L. BENEVOLO, *History of Modern Architecture*, The MIT Press, Cambridge, 1971
M. TAFURI, F. DAL CO, *Modern Architecture*, Abrams, New York, 1979
K. FRAMPTON, *Modern Architecture. A Critical History*, Oxford University Press, New York, 1980
W.J. CURTIS, *Modern Architecture since 1900*, Phaidon Press, Oxford, 1982

- b) In order to delve into some of the architectural design specific topics:

R. VENTURI, *Complexity and Contradiction in Architecture*, Museum of Modern Art, New York, 1966
C. ROWE, *Mathematics of the Ideal Villa and Other Essays*, The MIT Press, Cambridge, 1976
C. NORBERG-SCHULZ, *Genius loci. Towards a Phenomenology of Architecture*, Rizzoli, New York, 1979

- c) In order to know the thinking of some masters of modern architecture:

F. LLOYD WRIGHT, *An Organic Architecture. The Architecture of Democracy*, Lund Humphries & Co, London, 1939
LE CORBUSIER, *Towards a New Architecture*, The Architectural Press, London, 1927 (1st ed. Vers une architecture, 1923)
L. MIES VAN DER ROHE, *Ludwig Mies van der Rohe. Complete Writings 1922-1969*, (M. Sabatino, V. Pizzigoni eds.), DOM publishers, Berlin 2020

- d) In order to know the thinking of some contemporary architects:

A. SIZA, *Architecture Writings*, (A. Angelillo ed.), Skira, Milano, 1998 (1st ed. Scritti di architettura, 1996)
A. CAMPO BAEZA, *The Built Idea*, Oscar Riera Publishers, Shenzhen, 2013 (1st ed. La idea construida, 1996)
P. ZUMTHOR, *Thinking Architecture*, Lars Müller Publishers, Baden, 1998