

## History of Architecture III

Semester 4

The third part of the lectures on History of Architecture provides a critical overview of the Modern Era, starting from the industrial revolution till the Second World War. Architectural buildings are analyzed as a complex summary of technical and constructive solutions and aesthetical/ philosophical contents, both in Europe and in North America.

One of the main focuses will be the new urban projects of Cairo and Alexandria during the 19<sup>th</sup> and 20<sup>th</sup> centuries and the related architectural constructions. Field excursions will give the students the possibility to learn how to describe and stylistically recognize buildings.

Students develop an understanding of the Modern Architectural Movement in Europe and North America, and its relationship to Egypt.

Code	No.	Course	L	E	P	ECTS
ARCH	401	History of Architecture III	2	0	0	3

## CAAD/CAM II

Semester 4

The creation of all types of mesh modelling (compound forms, free forms and others) and their rendering will be exposed. The Topics for mesh modelling include: primitive objects, compound objects, all types of modifiers, mesh editing, NURBS and others commands. Topics for 3d rendering include creating and applying maps and realistic textures, lighting principles and techniques, camera types, render types and atmosphere design.

Preparing complex forms for 2d fabrication (unfolding, unrolling, tessellations and others) through 3d modelling software.

In CAAD, students should be able to understand applications of 3d modelling and rendering software in architecture. They are able to use the 3dsMax software to create and modify 3d complex models from scratch, acquiring the know-how of using suitable lighting for a certain scene and applying realistic materials and textures to a certain project. They also should be acquainted with different kinds of renders and their applications, while being able to design the suitable atmosphere for a certain scene.

In CAM, students should be able to use 3dsMax to prepare complex forms to be manufactured, in addition to knowing different methods of tessellations.

Code	No.	Course	L	E	P	ECTS
ARCH	402	CAAD/CAM II	1	0	2	3

## Theory of Architecture I

Semester 4

This course aims at introducing theories of architectural design dealing with needs, design goals, design standards, potentials and constraints; in addition to function: anthropometric data, building typologies, service and circulation spaces; horizontal circulation: corridors, lobbies and entrances; vertical circulation: ramps, staircases, lifts and escalators; spatial organization: spatial relationships and spatial continuity. The course also introduces the theories and philosophies of the international styles of the 20<sup>th</sup> century and the modern movement: the organic theories of Sullivan and Wright; the functional formalism of Le Corbusier; the functional technological theories of the Bauhaus and Gropius; the structuralism of Mies van der Rohe and the expressionism of Mendelsohn.

Students should be able to examine and analyze different building typologies. Moreover, they should be acquainted with the theories and philosophies of the international styles of the 20<sup>th</sup> century and the modern movement.

Code	No.	Course	L	E	P	ECTS
ARCH	303	Theory of Architecture I	2	0	0	3

## Building Technology III

Semester 4

This course introduces advanced construction techniques and building envelope systems with focus on modern sustainable building concepts to provide thermal, acoustical and thermal comfort. The course covers a detailed examination of building technical installations, comprising electrical, mechanical, plumbing systems and includes the analysis of simple case studies, field trips to buildings under construction and design assignments.

The students should be able to understand the integration of technical systems in buildings including heating and cooling to provide thermal, acoustical and thermal comfort.

Code	No.	Course	L	E	P	ECTS
ARCH	404	Building Technology III	2	3	0	7

## Design Studio II

Semester 4

This design studio requires students to think of architecture from an “outside-in” approach, focusing on form, composition and structure. The main design project of the semester is one of reduced complexity, integrating building design and urban design. Proportion, balance, rhythm, and dynamics are emphasized as compositional elements of spatial design and are used as tools of functional accommodation. Three-dimensional models are used as means of design, encouraging students to think spatially. Questions of meaning, message and symbolism are tackled and applied, as ways of developing ideas for architectural form and space-making. Advanced and digital presentation techniques are used.

Students are able to design projects of reduced complexity while integrating it with the surroundings and paying attention to construction details.

Code	No.	Course	L	E	P	ECTS
ARCH	405	Design Studio II	1	5	0	8

## Concrete Structures Design

Semester 4

Reinforced concrete structures represent a major portion of the construction industry. This course provides the students with the basic knowledge about the choice of the appropriate structural system, design of structural elements under various straining actions, design of concrete slabs, design of beams, design of columns and design of supporting foundation systems. A brief introduction of the geotechnical information, necessary for the foundation design, is also covered.

Students are able to choose and dimension the appropriate structural system for any given building. The students shall be able to calculate the concrete dimensions and the required steel reinforcement for structural elements, beams, slabs, columns and foundations, under the applied dead and live loads. The students shall be able to develop complete design drawings with all the reinforcement details.

Code	No.	Course	L	E	P	ECTS
ARCH	406	Concrete Structures Design	1	2	0	3