

CAAD/CAM IV

Semester 6

This is an introductory to algorithmic architecture with focus on parametric modelling. This course is to prepare students for modelling architectural geometry through the development of parametric schemes for architecture. Topics in parametric architecture include numerical data sets, functions, Boolean data types, vectors and planes, parametric spaces, deformations and morphing. Fabrication of resulting complicated forms; topics include exporting data to data sheet, laser cutting and manufacturing, labeling, and assembly.

In CAAD, the students should be able to use algorithms in architectural design, while understanding the basics of geometric modelling, including coordinates and transformations. They should be able to generate complex forms using parametric concepts, as well as being able to design an algorithm to generate a certain form. At the end, they should be able to use grasshopper to design parametric forms. In CAM, the students should have the ability to prepare a complex geometric form to be fabricated.

Code	No.	Course	L	E	P	ECTS
ARCH	601	CAD/CAM IV	1	0	2	3

Design Studio IV

Semester 6

This studio requires the design of more complex projects, for example a museum, a library, a hotel; or a small urban design project with focus on detailing; or projects with demanding context (building in an existing structure, building extension, refurbishment...). Students are offered urban and architectural design projects, which deal with the building context: how people perceive the urban environment, how buildings fit contextually into existing circumstances, and how outdoor spaces relate to built forms. It demonstrates the role of urban design in shaping urban environments and the relationship between urban design and architecture.

Students are able to design buildings of higher complexity within an urban context. They are able to carry out comparative analysis studies of a number of existing urban environments and the different factors that helped shape them (design factors, cultural attributes, social and environmental determinants).

Code	No.	Course	L	E	P	ECTS
ARCH	602	Design Studio IV (selected urban and architectural design projects)	1	6	0	14

Surveying

Semester 6

This course introduces the basics of surveying theory. Students learn how to record field data, data representation, scales and measurement units, field sketches, electronic methods of linear measurements, Azimuth methods of observing angles and their associated errors, digital mapping production and contouring. The course involves field work, survey planning and associated survey calculations, as well as an introduction to 3D scanning of buildings.

Students are able to record and represent field data. They should be able to operate automatic level instruments, total station and GPS.

Code	No.	Course	L	E	P	ECTS
ARCH	603	Surveying	1	2	0	3

Theory of Urban Planning

Semester 6

The purpose of the course is to introduce the origins of the city throughout history and the forces that affect its growth. The course concentrates on the origins of the modern city, enabling students to differentiate between urban patterns and understand the factors that shape the city (political, social, economic, cultural, and religious). This is done through comparative analysis and case studies.

This course aims at demonstrating the evolution of planning concepts and planning theory and to review the major planning tools available to control growth and development of land in urban areas.

Students are able to understand, examine and analyze the urban structures of cities throughout history, with a concentration on the modern city. Students gain knowledge about the intellectual, cultural and political underpinnings of planning and how to analyze the legal constraints placed on urban growth and development.

Code	No.	Course	L	E	P	ECTS
UP	601	Theory of Urban Planning	2	0	0	3

Housing

Semester 6

This course introduces housing issues in developing countries, characterized by rapid growth of towns and cities, demonstrating different ways of planning and organizing the built environment. Topics cover housing system typologies, housing policies in Egypt, housing and economic aspects, finance, technological considerations, social factors, and priorities. Housing fundamentals are reinforced through case studies.

Students understand the fundamentals of housing and are able to discuss emerging concepts, methods and tools to face new challenges in the housing sector.

Code	No.	Course	L	E	P	ECTS
UP	602	Housing	1	2	0	4

Introduction to Urban Sociology

Semester 6

This course introduces a theoretical approach for examining various urban environments and settings in relation to users' behavioural patterns and ethnicity. It examines traditional urban settings faced with modernization and contemporary challenges, spatial location and urban growth in relation to environmental, social, cultural and historic shaping factors. The course includes field work and research analysis, as well as cross-cultural comparisons.

Students learn to examine urban structures in relation to social aspects, behavioural and cultural patterns.

Code	No.	Course	L	E	P	ECTS
UP	603	Introduction to Urban Sociology	2	0	0	3