Course guide
210332 - SLAC - Laboratory of Computational Architecture Seminar

Last modified: 12/07/2024

Unit in charge: Barcelona School of Architecture
Teaching unit: 752 - RA - Departamento de Representación Arquitectónica.

Degree: DEGREE IN ARCHITECTURE STUDIES (Syllabus 2014). (Optional subject).

Academic year: 2024 **ECTS Credits:** 3.0 **Languages:** Catalan, Spanish, English

LECTURER

Coordinating lecturer: SALVADOR GILABERT SANZ

Others: Segon quadrimestre:
OMAR FABRISIO AVELLANEDA LOPEZ - LAC
SALVADOR GILABERT SANZ - LAC

PRIOR SKILLS

Hand drawing
Knowledge of Rhinoceros and geometry

REQUIREMENTS

Having passed Projects V and VI. It is mandatory to register for the seminar at the same time as the related Thematic Workshop.

TEACHING METHODOLOGY

Theoretical classes, seminars and workshops

LEARNING OBJECTIVES OF THE SUBJECT

Work process from several points of view; evaluating its strategic, extrapolable, scalable or repeatable value through an additive work process.
It is about proposing built solutions that are strategic and that allow to transform and improve existing conditions, always under the prism of the triple balance through data management and computing

As a prominent instrument of the course, students will learn to use computational systems, and data processing as forms of knowledge and graphical interpretation of reality in different scales and formats, so that they become essential tools to foreshadow a new reality transformed into through project intervention.

general objective
Learn to know what exists from different points of view
Learn to identify problems and the treatment of data to work with computer systems
Learn to propose project solutions (of different appropriate and relevant scales) assessing their strategic, extrapolable, scalable or repeatable value.

STUDY LOAD

Type	Hours	Percentage
Self study	45,0	60.00
Hours large group	30,0	40.00

Total learning time: 75 h

CONTENTS

seminar and data computering

Description:
The course content is organized into 3 thematic PARTS and 2 DELIVERIES, based on the integration of three fundamental concepts:

1 Sustainability of the project and "triple balance". Faced with the current climate emergency, concepts of sustainability and energy efficiency will be explained and taken into account in the projects, both in the appropriate solution and in the correct quantification.

2 Computational design of the project. The information, data and situations or phenomena present in the site are used to creatively generate computational graphic systems that serve as design tools. Based on this information, ideas will be developed with computational tools to evolve complex geometries such as parametric, fractal or fragmented systems. The next step is to develop these proposals with computational systems, using them in the most appropriate way to find solutions to the proposed ideas.

3 Graphic documentation of the presentation. The principle of the progression of improving skills and knowledge is taken. Consequently, the skills of hand drawing, making collages to develop and transform ideas, from the abstract world to the concrete world of architecture, will be strengthened.

Specific objectives:

Integrate the triple bottom line through data, within an additive work process through computing

Full-or-part-time: 0h 30m
Practical classes: 0h 30m

GRADING SYSTEM

0 to 10

BIBLIOGRAPHY

Basic:
- Pottmann, Helmut; Bentley, Daril. Architectural geometry. Exton, PA: Bentley Institute Press, ISBN 9781934493045.
- Thonsom J. A.. On growth and form. Cambridge: The University Press, 1917. ISBN 0521437768.
- Tedeschi, Arturo. AAD_Algorithms-aided design : parametric strategies using Grasshopper. Brienza: Le Penseur, cop. 2014. ISBN 9788895315300.
- Guillermo Fernández-Abascal. Documentos de su tiempo: Dibujos de jovenes arquitectos Españoles. Madrd: ediciones asimétricas, 2023.

RESOURCES

Other resources:
About Parametric Design with Grasshopper (Rhinoceros)

Programs Rhinoceros 3D v.8 - v.7 + Grasshopper
Full 90-day trial version (windows and mac) in different languages.
https://www.rhino3d.com/downloa />
QGIS
https://qgis.org/es/site/forusers/download.html />
Essential Algorithms and Data Structures - Rajaa Issa -
https://www.food4rhino.com/resource/essential-algorithms-and-data-structures-grasshopper />
Webgraph
https://www.grasshopper3d.com/ official web / examples / forums / downloads
https://www.grasshopper3d.com/page/tutorials-1 official web / tutorials
https://www.food4rhino.com/ plugins and apss for rhino and gh
http://grasshopperdocs.com/ helps, plugins and tutorials
http://grasshopperprimer.com/en/index.html theory and explanations
https://www.ladybug.tools/index.html#header-slide-show ladybug tools