



## Course guide

# 210332 - SLAC - Laboratory of Computational Architecture Seminar

Last modified: 14/07/2026

**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:** 2026    **ECTS Credits:** 3.0    **Languages:** English

### LECTURER

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**Coordinating lecturer:** SALVADOR GILABERT SANZ  
**Others:** Segon quadrimestre:  
SALVADOR GILABERT SANZ - LAC

### PRIOR SKILLS

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Hand drawing  
Knowledge of Rhinoceros and geometry

### REQUIREMENTS

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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

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Theoretical classes, seminars and workshops

### LEARNING OBJECTIVES OF THE SUBJECT

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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        | 47,0  | 62.67      |
| Hours large group | 28,0  | 37.33      |

**Total learning time:** 75 h

## CONTENTS

### seminar and data computing

#### 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

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the [Action Framework for Academic Integrity in Assessment at the UPC](#).

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## BIBLIOGRAPHY

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### 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

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### 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/download> />

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