

69212 - Buildings simulation in BIM

Syllabus Information

Academic year: 2024/25

Subject: 69212 - Buildings simulation in BIM

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 519 - Master's in Architecture

ECTS: 3.0

Year: 1

Semester: First semester

Subject type: Optional

Module:

1. General information

The subject aims to provide the student with the necessary knowledge to draft the quality graphic documentation required for the execution of the building work with BIM technology: new construction and intervention.

To learn about and explore the possibilities offered by the virtual model in terms of measurement automation, process simulation, export of compatible simulation files (structures, facilities, carbon footprint, compliance with legislation), etc.

2. Learning results

- The learning result of this elective is primarily the recreation of the virtual building and thus its modelling.
- To simulate using real material and technical characteristics of the building.
- To generate appropriate modes of representation to effectively communicate the project.
- To detect geometric and physical interferences in the building.
- To economically simulate the building cost.
- To simulate the building realization process.
- To contribute to the achievement of SDGs: 6, 7, 9, 11, 12, 13. To certify the carbon footprint produced by the building, through Ecodesigner and similar applications.
- To simulate and control the coordination with other professionals involved in the building.

3. Syllabus

PRESENTATION

PROJECT EXECUTION REPRESENTATION / BIM DEFINITIONS (LOD)

INTRODUCTION TO REVIT - ARCHICAD COMPARISON

INTERFACE / CONFIGURATION / MODEL MANAGEMENT / BASIC TOOLS

TERRAIN / LEVELS AND GRIDS / INSERT DWG / SECTIONS / ELEVATIONS

FLOOR / WALLS / ROOF / COLUMNS / OPENINGS

FAMILIES: LOADABLE COMPONENTS AND ON-SITE ELEMENTS / EXTERNAL LIBRARIES

FREE MODELING / STAIRS / RAMPS / HANDRAILS

CURTAIN WALL / DIMENSIONS / TEXTS / LABELS / AREAS

VIEWS / DETAILS / EXPORT DRAWINGS

3D VIEW / MATERIALS / DRAWINGS / PRINTING

MEASUREMENTS / CARPENTRY DRAWINGS / INTEROPERABILITY

BIM IN EXISTING BUILDINGS: POINT CLOUD SURVEY / BIM MANAGEMENT

BIM ON SITE

4. Academic activities

Theoretical sessions: where the philosophy and management of BIM technology is explained. A participatory master class integrating learning based on case studies is proposed.

Practical sessions: aimed at the assimilation and management of the theoretical knowledge taught and applied to the subject's work.

Assessment: through the control, presentation and delivery of the subject's work.

5. Assessment system

The evaluation will be done through the qualification of a work done by the students, building and simulating the virtual building in BIM technology with a level of development LOD 300, and obtaining all the necessary documentation for its representation. This work will account for 100% of the overall grade and the evaluation criteria are structured in two groups: the representation (55%) and the modeling or survey (45%).

The evaluation system will be the same for all the calls of the course.

The course work will be delivered in digital format on the day fixed by the center in the exam calendar.

The student will be able to pass the course by taking the global test consisting of a theoretical-practical exam in both the first and the second call, which will be worth 100% of the grade.

6. Sustainable Development Goals

- 8 - Decent Work and Economic Growth
- 9 - Industry, Innovation and Infrastructure
- 11 - Sustainable Cities and Communities