Course guide
250732 - 250732 - Construction Seminars with BIM

Last modified: 28/03/2024

Unit in charge:	Barcelona School of Civil Engineering
Teaching unit:	751 - DECA - Department of Civil and Environmental Engineering.

Degree:	MASTER'S DEGREE IN STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2023   **ECTS Credits:** 2.5   **Languages:** Spanish

LECTURER

Coordinating lecturer: JOSE TURMO CODERQUE

Others: AHMAD ALAHMAD, JOSE TURMO CODERQUE

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
13365. Designing and building using traditional materials (reinforced concrete, prestressed concrete, structural steel, masonry, wood) and new materials (composites, stainless steel, aluminum, shape memory alloys?).
13367. To apply innovative and sustainable technological aspects in the management and implementation of projects and works.
13370. To analyze the multiple technical and legal conditions arising in the construction of public works, and use proven methods and proven technologies with the aim of achieving greater efficiency in construction while respecting the environment and protecting the safety and health of workers and users of public works.

Generical:
13361. To develop, improve and use conventional materials and new construction techniques to ensure the safety requirements, functionality, durability and sustainability.
13362. To define construction processes and methods of organization and management of projects and works.
13363. To design plans for safety, quality and environmental and socioeconomic impacts related to the construction process.

TEACHING METHODOLOGY

The communication of the teachers will be mostly in Spanish. Workshops and interventions by speakers other than the teachers of the subject are planned for the course. These will be held in Spanish and very exceptionally in Catalan or English. In total, 20 hours of interventions are planned, a teaching load that corresponds to the 2.5 ECTS of the subject. Student queries may be answered in Spanish, Catalan or English. The exam can be answered in Spanish, Catalan or English. Support material is used through the virtual campus: contents and bibliography. The material can be in Spanish, Catalan and English. Site visits made within the framework of the subject, if applicable, will be in Spanish or Catalan.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

LEARNING OBJECTIVES OF THE SUBJECT

Subject to acquire knowledge related to the application of digital tools in the construction sector

· Criteria, knowledge and reflections on the qualities and values of a good manager (Ability to manage the execution and control of the costs of projects and works).
· Ability to acquire knowledge in the most advanced aspects of research related to construction (Capacity to create and manage digital models of civil infrastructures and buildings)

The engineer in the current context. The manager: leadership, creativity, innovation, motivation and communication.
Recent advances related to construction research. Introduction to the Building Information Modeling (BIM) methodology
Introduction to modeling and management of BIM models
Introduction to the scheduling andvisualization of BIM projects (4D)
Introduction to the economic management of BIM projects (5D)

Subject to acquire knowledge related to the application of digital tools in the construction sector
- Ability to create and manage digital models of civil infrastructures and buildings
- Ability to manage the execution and control of project costs and works

STUDY LOAD

Type	Hours	Percentage
Hours small group	4,9	7.83
Hours medium group	4,9	7.83
Hours large group	12,8	20.45
Self study	40,0	63.90

Total learning time: 62.6 h

CONTENTS

Introduction to Building Information Modeling (BIM) methodology

Description:
Presentation of the course.
Introduction to digitization in civil engineering and architecture Introduction to the fundamental characteristics and uses of the BIM methodology

Full-or-part-time: 4h 48m
Theory classes: 2h
Self study : 2h 48m

Introduction to modeling and management of BIM models

Description:
Introduction to BIM modeling
Introduction to BIM model management

Full-or-part-time: 26h 24m
Laboratory classes: 11h
Self study : 15h 24m

Introduction to the management and temporary visualization of BIM projects (4D)

Description:
Introduction to the schedule management of BIM projects
Introduction to the temporary visualization of BIM projects

Full-or-part-time: 18h
Laboratory classes: 7h 30m
Self study : 10h 30m

Introduction to the financial management of BIM projects (5D)

Description:
Introduction to the economic management of BIM projects

Full-or-part-time: 4h 48m
Laboratory classes: 2h
Self study : 2h 48m

GRADING SYSTEM

The mark of the subject is obtained from the marks of continuous evaluation. Continuous assessment consists of carrying out different activities, both individual and group. Additive in nature and format, carried out during the course (inside the classroom and outside). The evaluation tests consist of carrying out some practical work in groups, which have a value of 70% of the final grade, and an individual exam which has a value of 30%. The realization and delivery in time and form of practical work is an essential condition to pass the course.

EXAMINATION RULES.

If any of the continuous assessment activities are not carried out in the scheduled period, it will be graded with a score of zero. If you do not take the exam or any of the assignments, you will not be able to pass the subject.

BIBLIOGRAPHY

Basic:
- Sacks, R. Eastman, C. Lee, G. Teicholz, P.. BIM Handbook: A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers. Wiley, 2018.
- Roberti, F. Ferreira, D.. Increasing Autodesk Revit Productivity for BIM projects. 2021.

Complementary:
- Manual REVIT AUTODESK.
- Manual NAVISWORKS.
- Manual Microsoft Project.