

30741 - Construction 4A

Syllabus Information

Academic Year: 2020/21

Subject: 30741 - Construction 4A

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 470 - Bachelor's Degree in Architecture Studies

ECTS: 6.0

Year: 5

Semester: Second semester

Subject Type: Optional

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, workshops, tutorials, and autonomous work and study.

- 1. The acquisition of basic knowledge is mainly developed through participatory lectures and small case studies.
- 2. The application of knowledge is done through workshops in which students will develop a final work under the supervision of teachers, presenting and defending the solutions adopted.
- 3. The tutorials will serve to review both knowledge and the work done by the student.
- To follow the theory the student will be in possession of the teaching materials developed by teachers and various materials of interest to increase motivation and curiosity to eventually continue learning individually.

4.2.Learning tasks

This course is organized as follows:

- **Lectures**
- **Workshops.** 2 hours a week. Students will develop the knowledge acquired in theory.
- **Tutorials**
- **Autonomous work and study.**

The practices will focus on the constructive resolution of a building, to be delivered at the end of the course, so that students will face the evolution that the structural, energetic and cladding systems suffer throughout the project, as well as the integration of all them.

4.3.Syllabus

This course will address the following topics:

1. Singular architecture and constructive thinking

- 1.1 Complexity in contemporary architecture
- 1.2 Thinking structures, constructive thinking
- 1.3 Systems, strategies, attitudes

2. High tech and the technological attitude

- 2.1 Industrialized constructive systems
- 2.2 Constructive thinking: design and integration of materials and construction techniques
- 2.3 Innovation
- 2.4 Technological architecture

3. Structural systems

- 3.1 Structure as a system
- 3.2 Structure Systems by Heino Engel
- 3.3 Vector active
- 3.4 Section active
- 3.5 Altered structures
 - 3.5.1. Selection and design
 - 3.5.2. Alejandro Bernabéu and Cecil Balmond
- 3.6 Prefabrication
- 3.7 Integrating the systems, Structure

4. Energy systems

- 4.1 Architecture and energy
- 4.2 Social and environmental impact
- 4.3 Sustainability and Energy Efficiency
- 4.4 High energy efficiency buildings
- 4.5 Strategies in the design and construction of energy-efficient buildings
- 4.6 Integrating the systems, Energy
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5. Cladding systems

- 5.1 Cladding in contemporary architecture
- 5.2 The facade understood as a complex system of interaction with the environment
- 5.3 Heavy cladding
- 5.4 Light cladding
- 5.5 Metal façade
 - 5.5.1. Steel
 - 5.5.2. Aluminium
 - 5.5.3. Copper
 - 5.5.4. Zinc, Titanium
- 5.6 Glass architecture
- 5.7 Curtainwall
- 5.8 Stone
- 5.9 Plastic
 - 5.9.1 Textiles
- 5.10 Passive solar collection elements
- 5.11 Integrating the systems, Cladding

6. Integrating the systems

- 6.1 Structure/Energy/Cladding
- 6.2 Vertical elements
- 6.3 Accessibility
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4.4.Course planning and calendar

- Two hours of weekly theoretical knowledge will be taught. The theoretical teaching of the course will be developed through participatory lectures.
- Complementarily two hours a week will be developed and taught as workshop sessions in which students will develop the knowledge acquired in theory. The practice sessions will focus on the constructive resolution of a building, to be delivered at the end of the course, so that students will face the evolution that the structural, energetic and cladding systems suffer throughout the project, as well as the integration of all them.
- Throughout the course they will make several partial deliveries of work, announced in advance through e-mail and the moodle platform, indicating the work to be included.
- There will be a final delivery of all the work, the date shall be determined in coordination with deliveries of works of other courses.
- The student will be evaluated through a system of continuous assessment. Students who do not opt for continuous assessment, who do not pass the course by this procedure, or who want to improve their final score, are entitled to present to a final global test, prevailing in any case, the best test scores.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the College of Higher Engineering and Architecture (EINA) website (<https://eina.unizar.es/>) and Moodle.

4.5.Bibliography and recommended resources

The student could find additional information and resources in the library:

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=8661>

http://biblos.unizar.es/br/br_citas.php?codigo=30741&year=2019

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- BB** Construir la arquitectura : del material en bruto al edificio : un manual / Andrea Deplazes (ed.) Barcelona : Gustavo Gili, D.L. 2010
- BB** Engel, Heino. Sistemas de estructuras = sistemas estruturais / Heino Engel ; con un prólogo de Ralph Rapson. - 1ª ed., 6ª tirada Barcelona : Gustavo Gili, 2011
- BC** Ábalos, Iñaki. Técnica y arquitectura en la ciudad contemporánea : 1950- 2000 / Iñaki Ábalos, Juan Herreros . - 3ª ed. Hondarribia (Guipúzcoa) : Nerea, 2000
- BC** Allen, Edward. Fundamentals of building construction : materials and methods / Edward Allen and Joseph Iano . - 5th ed. Hoboken (New Jersey) : John Wiley & Sons, cop. 2009
- BC** Araujo, Ramón. La arquitectura como técnica. (1), Superficies / Ramón Araujo Armero Madrid : ATC Ediciones, D.L. 2007
- BC** Araujo, Ramón. La arquitectura como técnica. (2), Construir en altura : sistemas, tipos y estructuras / Ramón Araujo ; prólogo Enrique Álvarez-Sala ; edición Jorge Sainz Barcelona : Reverté, D. L. 2012
- BC** Deleuze, Gilles. Rizoma : (introducción) / Gilles Deleuze, Felix Guattari Valencia : Pre-Textos, 1977
- BC** Eisenman, Peter. Diez edificios canónicos 1950-2000 / Peter Eisenman ; prólogo de Stan Allen ; editado por Ariane Lourie ; traducción de Moisés Puente Barcelona : Gustavo Gili, D.L. 2011
- BC** Fanelli, Giovanni. El principio del revestimiento : prolegómenos a una historia de la arquitectura contemporánea / Giovanni Fanelli, Roberto Gargiani ; traducción, Juan Calatrava Madrid : Akal, 1999
- BC** Foster, Hal. El complejo arte-arquitectura / Hal Foster ; traducción de José Adrián Vitier Madrid : Turner, D.L. 2013
- BC** Frampton, Kenneth. Estudios sobre cultura tectónica : poéticas de la construcción en la arquitectura de los

siglos XIX y XX / Kenneth Frampton ; traducción Amaya Bozal ; revisión científica Juan Calatrava ; [edición de John Cava] Madrid : Akal, 1999

- BC** Koolhaas, Rem. Delirio de Nueva York : un manifiesto retroactivo para Manhattan / Rem Koolhaas ; traducción de Jorge Sainz . - 1ª ed. Barcelona : Gustavo Gili, 2009
[@libro](#) - Disponible también en formato electrónico
- BC** Meyer Boake, Terri. Understanding steel design . an architectural design manual / Terri Meyer Boake , with technical illustration by Vincent Hui Basel (Switzerland) : Birkhäuser, cop. 2012
- BC** Moneo, Rafael. Inquietud teórica y estrategia proyectual en la obra de ocho arquitectos contemporáneos / Rafael Moneo Barcelona : Actar, cop. 2004
- BC** Montaner, Josep Maria. Después del movimiento moderno : arquitectura de la segunda mitad del siglo XX / Josep Maria Montaner . - 2ª ed. rev., 4ª tirada Barcelona : Gustavo Gili, 2009
- BC** Montaner, Josep Maria. La condición contemporánea de la arquitectura / Josep Maria Montaner Barcelona : Gustavo Gili, D.L. 2015
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- BC** Paricio, Ignacio. La construcción de la arquitectura. Vol. 1, Las técnicas / Ignacio Paricio . - 4ª ed., 2ª reimp. Barcelona : Institut de Tecnologia de la Construcció de Catalunya, 2004
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- BC** Paricio, Ignacio. La fachada de ladrillo / Ignacio Paricio . - 3ª ed. Barcelona : Bisagra, 2000
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- BC** Schmitt, Heinrich. Tratado de construcción / Heinrich Schmitt, Andreas Heene. - 8ª ed., rev. y amp. Barcelona : Gustavo Gili, D.L. 2009
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