Approval date: **27/06/2023**

COURSE GUIDE

Introduction to Construction (2091119)

Grado (Bachelor's Degree)	Grado en Estudios de Arquitectura	**Branch**	Technology, Engineering and Architecture
Module	Fundamentos de la Arquitectura	**Subject**	Introducción a la Construcción

Year of study	1º	**Semester**	2º	**ECTS Credits**	6	**Course type**	Core course

PREREQUISITES AND RECOMMENDATIONS

Recommendations:

- Have completed the graphic expression subjects of the first semester of the Degree in Architecture.
- Adequate graphic knowledge about language and representation of the subject.
- Graphic expression: drawing and descriptive geometry.

BRIEF DESCRIPTION OF COURSE CONTENT (According to the programme's verification report)

- Materials, technique and architecture: approach to the construction system.
- Introduction to structural types.
- Bases for the design and project of construction systems in architecture and urbanism.
- Technical bases of comfort and well-being parameters.
- Influence of the environment on architecture and urbanism.
- Bases for the design and project of architectural and urban conditioning and facilities.

SKILLS

GENERAL SKILLS

- CG01 - Capacidad de análisis y síntesis
- CG02 - Capacidad de organización y planificación
- CG06 - Capacidad de gestión de la información
- CG07 - Resolución de problemas
- CG08 - Toma de decisiones
- CG09 - Trabajo en equipo
- CG10 - Trabajo en un equipo de carácter interdisciplinar
- CG16 - Aprendizaje autónomo
- CG17 - Adaptación a nuevas situaciones
- CG18 - Creatividad

- CG22 - Motivación por la calidad
- CG23 - Sensibilidad hacia temas medioambientales
- CG24 - Trabajo en colaboración con responsabilidades compartidas
- CG27 - Visión espacial
- CG29 - Intuición mecánica
- CG30 - Sensibilidad estética
- CG32 - Cultura histórica
- CG33 - Afán de emulación

SUBJECT-SPECIFIC SKILLS

- CE20 - Aptitud para: a) Aplicar los procedimientos gráficos a la representación y análisis de espacios y objetos; b) Concebir y representar los atributos visuales de los objetos y dominar la proporción y las técnicas del dibujo, incluidas las informáticas.
- CE22 - Capacidad para: a) El análisis y la ideación formal como bases de la acción de proyecto.
- CE23 - Conocimiento de: a) Las bases de los sistemas constructivos y las instalaciones.
- CE24 - Conocimiento adecuado de: a) Las teorías generales de la forma, la composición y los tipos arquitectónicos; b) La historia general de la arquitectura; c) Los métodos de estudio de los procesos de simbolización, las funciones prácticas y la ergonomía; d) Los métodos de estudio de las necesidades sociales, la calidad de vida, la habitabilidad y los programas básicos de vivienda; e) Las tradiciones arquitectónicas, urbanísticas y paisajísticas de la cultura occidental, así como de sus fundamentos técnicos, climáticos, económicos, sociales e ideológicos; f) La estética y la teoría e historia de las bellas artes y las artes aplicadas; g) Las bases de la arquitectura vernácula; h) La sociología, teoría e historia urbanas.

LEARNING OUTCOMES

- Know and apply graphic procedures to the representation and analysis of spaces and contruction techniques.
- Master the analysis and formal ideation as bases of project action, the bases of construction systems and facilities.
- Master the general theories of architectural form, composition and types, and urban theory and history.

PLANNED LEARNING ACTIVITIES

THEORY SYLLABUS

The subject belongs to the second semester teaching unit. Under the general heading entitled "REALITY AND REPRESENTATION", the Verified Report of the Degree in Architecture Studies addresses the following contents:
Representation systems. The drawing, maps, plans. Topography. proportion and scale. Geography, climate and sunshine. Knowledge and expression of the environment. Data collection. The flows. The temporality. The permanent and the ephemeral. The inductive procedure and intuitions. representation with models.
The program of specific theoretical contents of the subject Introduction to Construction includes the following topics:

Topic 1. Introduction. Learning to build architecture
- General concepts and definitions.
- The architectural project. The urbanization project.
- The construction process.
- Regulations in the construction of architecture.

Topic 2. Analysis of the building. Construction materials.
- Architectural configuration of the building.
- Basic concepts of resistance of materials.
- Construction materials.
- Basic construction techniques.
- General analysis of the building.

Topic 3. The terrain and the foundation.
- Foundation concept.
- The foundation ground.
- Preparation of land for construction. Earth movements.
- Classification of foundations.
- Retaining walls.

Topic 4. The supporting structure. load-bearing walls.
- The load-bearing wall. Resistance of brick frabrics.
- The rigged wall.
- The armed fabric.
- The block fabric.

Topic 5. The supporting structure. Flat porticos.
- Flat portico structure.
- Construction materials and systems.
- Portal elements.

Topic 6. The supporting structure: slabs.
- General concepts.
- Forged functions.
- Characteristics of the slabs. Guys.
- The materials used in the slabs.

Topic 7. The supporting structure. Stairs.
- General concepts.
- Graphic representation and proportion of the stairs.
- Calculation and layout of straight stairs.
- Stair construction.

Topic 8. The envelope of the building. Deck.
- General concepts.
- Classification of the covers.
- Geometric resolution and layout.
- Construction systems and materials used in the execution of a roof.

Topic 9. The envelope of the building. Facade closure.
- Facade enclosures: definition and requirements that are required of them.
- Construction systems for the execution of facades.
- The holes in the walls. Purpose and execution.
- Carpentry. Classification, enforceable requirements and construction systems.

Topic 10. Interior divisions and coverings.
- Interior divisions: definition and requirements that are demanded of them.
- Construction systems for the execution of interior divisions.
- Coatings: definition and requirements that are demanded of them.
- Types of coatings.

PRACTICAL SYLLABUS

Classroom Workshops:
The workshops in the classroom are carried out according to the objectives of the subject and the Organization Program of the Teaching Unit of the Semester (POU). It is done by groups. It can be complemented with the making of models. They are organized into three blocks of work:

- Lifting of the building: Survey of the planimetry of a building for its constructive development.
- Foundation and Supporting Structure: Design of the foundation and structure of a building; representation of the same at the execution project level.
- Building envelope. Construction of the city: Design of the building envelope; representation of the same at the execution project level and in relation to the environment in which it is located.

Seminars in the classroom: Seminars may be held in the classroom according to the objectives of the subject and the POU.
Field practices: Given that due to the number of students and the minimum safety conditions required in the works, it is not always possible to visit construction sites, the visualization and analysis of the construction process in the classroom is considered as an alternative. from photographs and videos of works in progress.

RECOMMENDED READING

ESSENTIAL READING

- TITLE: Las construcciones de la arquitectura. AUTHORS: Consuelo del Moral Ávila y Luis Delgado Méndez. EDITOR: Editorial Técnica AVICAM, Fleming. Granada, 2021
- TITLE: Razón y ser de los tipos estructurales. AUTHOR: E. Torroja Miret. EDITOR: Consejo Superior de Investigaciones Científicas. Madrid, 1996.
- TITLE: Vidas construidas. AUTHORS: Anatxu Zabalbeascoa y Javier Rodríguez Marcos. EDITOR: Gustavo Gili. Segunda edición revisada: Barcelona, 2015.
- TITLE: Diccionario de arquitectura y construcción. AUTHORS: Mª Soledad Camino Olea et al. EDITOR: Munilla-Leira. Madrid, 2001.
- Agenda 2030 para el desarrollo sostenible (ONU). Objetivo 11: Lograr que las ciudades sean más inclusivas, seguras, resilientes y sostenibles https://www.un.org/sustainabledevelopment/es/cities/
- TITLE: Cómo funciona un edificio. AUTHOR: E. Allen. EDITOR: Editorial Gustavo Gili. Barcelona, 2008 (17ª tirada).

COMPLEMENTARY READING

Building regulations (Spain):

- Ley 38/1999, de 5 de noviembre, de Ordenación de la Edificación. Y su desarrollo reglamentario a través del Código Técnico de la Edificación.
- Real Decreto 470/2021, de 29 de junio, por el que se aprueba el Código Estructural.

Regulations on Accessibility and Universal Design:

- Ley 4/2017, de 25 de septiembre, de los Derechos y la Atención a las Personas con Discapacidad en Andalucía
- Decreto 293/2009, de 7 de julio, por el que se aprueba el Reglamento que regula las normas para la accesibilidad en las infraestructuras, el urbanismo, la edificación y el transporte en Andalucía.
- Real Decreto 505/2007, de 20 de abril, por el que se aprueban las condiciones básicas de accesibilidad y no discriminación de las personas con discapacidad para el acceso y utilización de los espacios públicos urbanizados y edificaciones.

- Orden TMA/851/2021, de 23 de julio, por la que se desarrolla el documento técnico de condiciones básicas de accesibilidad y no discriminación para el acceso y la utilización de los espacios públicos urbanizados.
- Real Decreto Legislativo 1/2013, de 29 de noviembre, por el que se aprueba el Texto Refundido de la Ley General de derechos de las personas con discapacidad y de su inclusión social.

Construction catalogue. Criteria for the use of construction systems, construction details and quality control: Normas Tecnológicas de la Edificación (NTE), establecidas por Decreto 3565/1972, de 23 de diciembre.

- NTE Conditioning of the land and Foundations.
  NTE Structures.
- NTE Roofs and covers.
- NTE Façade and partitions.
- NTE Coatings.

Technical documentation on construction systems and construction materials. Sources: Manufacturers, suppliers and their associations. It will be provided by the teaching staff during the classes, as a guarantee that accurate and up-to-date information is provided, given the changing nature of technological advances and the business world.

RECOMMENDED LEARNING RESOURCES/TOOLS

Below is the web address of the Technical Building Code of Spain, where you can get fully updated:

- The legal texts of its approval and modifications.
- The basic documents (with comments and modifications).
- The recognized documents, including the Catalog of Constructive Elements of the CTE.

https://www.codigotecnico.org/

TEACHING METHODS

- MD01 - Lección magistral/expositiva
- MD02 - Sesiones de discusión y debate
- MD03 - Resolución de problemas y estudio de casos prácticos
- MD06 - Prácticas en sala de informática
- MD07 - Seminarios
- MD09 - Análisis de fuentes y documentos
- MD10 - Realización de trabajos en grupo
- MD11 - Realización de trabajos individuales

ASSESSMENT METHODS (Instruments, criteria and percentages)

ORDINARY EXAMINATION DIET

Evaluation criteria
EV-C1.- Verification of mastery of the contents, theoretical and practical, and critical elaboration of them.
EV-C2.- Assessment of the work carried out, individually or in a team, taking into account the presentation, writing and clarity of ideas, graphics, structure and scientific level, creativity,

justification of what is argued, capacity and richness of the criticism that is ago, and updating of the consulted bibliography.
EV-C3.- Degree of involvement and attitude of the students manifested in their participation in the consultations, exhibitions and debates, as well as in the preparation of the work, individually or in teams, and in the sharing sessions.
EV-C4.- Class attendance, seminars, conferences, tutorials, group sessions.
Evaluation coefficients

EVALUATION SYSTEM	MINIMUM WEIGHT	MAXIMUM WEIGHT
ES1 (EV-I1). Written exams: essay, short answer, objective, cases or assumptions, problem solving.	40.0%	55.0%
ES4 (EV-I4). Practical works and drawings, papers, reports, studies, memoirs, ...	40.0%	55.0%
ES2 (EV-I2). Oral tests: exhibition of works (individual or in groups), interviews, debates.	5.0%	20.0%

Each professor of the subject will be able to specify their evaluation system within the minimum and maximum weighting margins established in the previous table.

EXTRAORDINARY EXAMINATION DIET

The extraordinary evaluation is considered within the framework of continuous evaluation, with the adaptations that are necessary according to the characteristics of the call itself (there is no additional teaching with respect to that given for the ordinary evaluation) and the final situation of objectives achieved by the students in the ordinary evaluation.
Therefore, it is based on the evaluation criteria and evaluation systems provided for ordinary evaluation. In response to these necessary adaptations, it will be possible to dispense with group work and those evaluation criteria that imply student attendance at activities that will no longer be carried out: class attendance, seminars, group sessions, sharing sessions at exhibitions and discussions etc.
Each professor of the subject may specify their evaluation system within the minimum and maximum weighting margins established in the Evaluation System table that appears for ordinary evaluation, complying at all times with article 7.2 of the Evaluation Regulations for the UGR (no test can suppose by itself more than 70% of the final mark of the subject).

SINGLE FINAL ASSESSMENT (evaluación única final)

Regardless of what is established in the previous sections for the ordinary and extraordinary calls in its continuous evaluation modality, the students will be able to take advantage of the single evaluation modality.
The single evaluation requires express request and authorization, in accordance with the provisions of article 8 of the Regulations for Evaluation and Qualification of Students of the University of Granada, approved by the Governing Council.
To certify in a single academic act that they have acquired all the competencies described in this teaching guide, they must pass the test or set of tests that are proposed to them, resolving the theoretical and practical questions of the subject that arise in them.

ADDITIONAL INFORMATION

The evaluation criteria and instruments included in this section comply with what is regulated in the Consolidated Text of the Regulations approved by Agreement of the Governing Council in session of May 20, 2013, BOUGR no. 71, of May 27, 2013 and modified by the Agreements of the Governing Council in sessions of February 3, 2014, BOUGR no. 83, of June 25, 2014 and October 26, 2016, BOUGR no. 112, of November 9, 2016.
Following the recommendations of the CRUE and the Secretariat of Inclusion and Diversity of the UGR, the systems of acquisition and evaluation of competences included in this teaching guide will be applied in accordance with the principle of design for all people, facilitating learning and demonstration of knowledge according to the needs and functional diversity of the students.