

Academic Year/course: 2022/23

28609 - Building I

Syllabus Information

Academic Year: 2022/23

Subject: 28609 - Building I

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 422 - Bachelor's Degree in Building Engineering

ECTS: 6.0

Year: 1

Semester: First semester

Subject Type: Compulsory

Module:

1. General information

1.1. Aims of the course

The course and its expected results respond to the following approaches and objectives:

Firstly, students must learn about the world in which they are going to carry out their profession and the regulations that affect it.

Secondly, students must acquire the necessary skills that will allow them to know, understand, design and implement systems and construction processes corresponding to the first phase of the construction process, that is, the analysis of the soil, foundations, containments, structures and claddings.

These approaches and objectives are in line with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the course learning outcomes provides training and competence to contribute to their achievement to some degree.

- (3) Good Health and Well-being.
- (4) Quality Education.
- (6) Clean Water and Sanitation.
- (7) Affordable and Clean Energy.
- (9) Industry, Innovation and Infrastructure.
- (11) Sustainable Cities and Communities.
- (12) Responsible Consumption and Production.
- (13) Climate Action.

1.2. Context and importance of this course in the degree

The course of Building I is the first contact that students of Technical Architecture have with constructive itself, and from which they begin to become aware of how the construction process develops in the building and the role played by the Technical Architect.

It is part of a group of specific training compulsory courses, scheduled throughout the four years of the degree, which will provide many of the specific competences and further professional skills of these graduates.

1.3. Recommendations to take this course

The course on Building I does not require other prerequisites than those established for the access to the degree. However, knowledge and strategies from the subjects of Technical Drawing, for the representation of constructive details, and Physics for the understanding of concepts related to the structure systems of will be an asset.

2. Learning goals

2.1. Competences

Upon passing the subject, the student will be more competent to ...

Know the traditional or prefabricated materials and construction systems used in buildings, their varieties and the physical and mechanical characteristics that define them.

Identify the elements and construction systems, define their function and compatibility and their implementation in the construction process. Pose and solve constructive details.

Know the specific control procedures of the actual implementation of the building work.

Diagnose the causes and appearance of building damage, providing solutions to prevent or correct pathologies, and analyze the life cycle of construction elements and systems.

Apply the technical regulations to the building process, and generate technical specification documents for the procedures and construction methods of buildings.

Apply the facilities specific regulations to the building process.

Analyze, design and provide solutions that facilitate universal accessibility in buildings and their surroundings.

2.2. Learning goals

The student, to pass this subject, must demonstrate the following outcomes ...

Have knowledge of the traditional or prefabricated construction systems used in construction and their varieties.

Be able to identify the elements and construction systems, define their function and compatibility, and their implementation in the construction process.

Know how to plan and solve construction details, as well as come up with, design, define, detail and solve elements, processes and construction systems technically and technologically.

Be able to apply technical regulations to the building process, and generate technical specification documents for construction procedures and construction methods.

2.3. Importance of learning goals

The course of Building I means, somehow, the introduction of the student in the building world, and offers training with content to be applied and developed in the student's professional future, but which, in addition, with the achievement of the learning outcomes will help him achieve the necessary skills for understanding and progressing in the study of the rest of the subjects in this course, (Building II, Building III, Sustainable Building and Maintenance).

3. Assessment (1st and 2nd call)

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

The student must demonstrate that they have achieved the expected learning outcomes through the following assessment activities

At the beginning of the course the student will choose one of the following two assessment methodologies:

? **Global assessment, with continuous monitoring:** Students must take and pass the practical tests, the academic tasks proposed in the course within scheduled deadlines, and a final written test.

? **Global assessment, without continuous monitoring:** Students don't need to take or pass the practical tests or academic tasks proposed in the course. In this case, students, in addition to taking the final written test, must pass a final practical test, which will be taken on the same day as the written exam, which will be a compendium of the practice tasks done during the course and based on a project about a real building.

The term and mode of delivery of practical tests and academic work will be explained in the assignments

1.- GLOBAL ASSESSMENT MODE, CONTINUOUS MONITORING

The assessment mode will be global with continuous monitoring, and the teacher will evaluate the student's participation in the lectures, the demonstration of the knowledge acquired and the ability to solve problems that the teacher will observe in the practical classes. Likewise, the work / project carried out, in group, by the student will be evaluated. Finally, the student must take a final written test on the theoretical content of the subject.

The following table summarizes the indicative weights of the parts mentioned in the assessment process.

Participation in theoretical classes	10%
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Individual and Group Practice Tasks	40%
Final Written Test	50%

Each of the parts passed in the subject, will not be evaluated again during that academic year.

The grade obtained in the practical tasks, provided that the minimum required, 4.0, is reached, will be valid exclusively in the two calls of the academic year.

All students, who do not reach the necessary minimum grades required in the practical tests or academic work proposed in the subject, will automatically go to the global assessment mode without continuous monitoring.

2.- GLOBAL ASSESSMENT MODE WITHOUT CONTINUOUS MONITORING

The student must choose this modality when, for their personal situation, cannot adapt to the work rhythm required in the global assessment mode with continuous monitoring.

The student, in addition to the final written test, must take a final practical test, which will be seated on the same day as the exam, which will be a compendium of the practices developed during the course and will be based on a proposed drafting about a real building.

Throughout the course, the student will be able to modify the evaluation system depending on the evolution of their personal situation.

The following table summarizes the maximum indicative weights of the parts mentioned in the assessment process.

Final Practice Test	50%
Final Written Test	50%

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 theory sessions, practice sessions, autonomous work and study, and tutorials.

A strong interaction between the teacher/student. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The approach, methodology and assessment of this guide are intended to be the same for any teaching scenarios. They will be adapted to the social-health situation at any particular time, as well as to the instructions given by the authorities concerned.

4.2. Learning tasks

This 6 ECTS (150 hours) course is organized as follows:

- **Theory sessions.** 3 weekly hours. Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them in topics and or sections, interrelating them.
- **Practice sessions.** 1 weekly hour. The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.
- **Tutorials:** Individual ones, carried out giving individual, personalized attention with a teacher from the department. These tutorials may be in person or online.
- **Autonomous work and study.** The students solve different kind of practical activities on their own, based on theory sessions.
 - Study and understanding of the theory taught in the lectures.
 - Understanding and assimilation of the problems and practical cases solved in the practice sessions.
 - Preparation of seminars, solutions to proposed problems, etc.
 - Preparation of laboratory workshops, of summaries and reports.
 - Preparation of the written tests for continuous assessment and final exams.

4.3. Syllabus

Theory

Unit 1	The Building Process in Construction Building concept. Regulatory Scope (LOE). Building Types. Basic requirements. Intervening Agents. Resp
Unit 2	Soils, Remapping and Earthworks. Land Characteristics: Site and Soil. Geotechnical study. Types of soils. Remapping Concept. Remapping t terminology. Machines
Unit 3	Foundations Definition and Typologies. Direct Foundations. Allowable and Collapsing Pressures. Critical situations.
Unit 4	Deep Foundations. Definition and typologies. Micropiles, Piles and Screens: application scope, types and building process.
Unit 5	Walls. Definition. Classification. Working method. Critical Situations. Building process process. Joints. Drains.
Unit 6	Structures and Concrete Framing. Structure Concept. Types of Structures. Elements of Structures. Transmission of Loads. Concrete Feature Construction and Details. Framing Concept. Building. Typologies: unidirectional and bidirectional slabs. Pr
Unit 7	Stairs. Definition. Elements that make them up. Classification and Types. Design and Calculation. Building. Const
Unit 8	Metal Frames. Profile Types. Simple Profiles and Compound Profiles. Welded joints. Construction of structural elements.
Unit 9	Timber Frames. Timber Types. Protection. Joints and Fixing Elements. On-site Installation. Constructive details.
Unit 10	Masonry Frames. Masonry Types. Mortars. Frameworks. Joints. Types of walls. Bonds. Construction and On-site Installation
Unit 11	Facing Brick Facades. Wrapping concept. Terminology. Double Layer Claddings. On-site Installation: Remappings, Building and (
Unit 12	Interior Divisions. Brick Masonry. Remapping. On-site Installation
Unit 13	Continuous Coatings. Trim and Plaster. Fillings. Cement Plastering.
Unit 14	Flooring. Concrete Floors, joints and their on-site installation. Ceramic, Stoneware and Stone Floors.
Unit 15	Roofs. Sealing concept. Types of Roofs. Classification. Design and Construction. Constructive Solutions. Compor

Practice

Practice No. 1	Earth Movement Calculations and / or Soil Classification.
Practice No. 2	Design of Shallow Foundations.
Practice No. 3	Determination of the state of Loads in Slabs and Design of Structure Decks
Practice No. 4	Stair Calculation and Design.
Practice No. 5	Facing Brick Masonry Stakeout
Practice No. 6	Roof Design

4.4. Course planning and calendar

Classroom Session Calendar and Presentation of Projects

Lectures

Week 1	The Building Process in Construction
Week 2	Soils, Remapping and Earthworks.
Week 3	Foundations
Week 4	Deep Foundations.
Week 5	Walls.
Week 6	Structures and Concrete Framing.
Week 7	Stairs.
Week 8	Metal Frames.
Week 9	Timber Frames.
Week 10	Masonry Frames.
Week 11	Facing Brick Facades.
Week 12	Interior Divisions.
Week 13	Continuous Coatings.
Week 14	Flooring.
Week 15	Roofs.

Practical classes

Practice No. 1 (week 3)	Earth Movement Calculations and / or Soil Classification.
Practice No. 2 (week 4)	Design of Shallow Foundations.
Practice No. 3 (week 7)	Determination of the state of Loads in Slabs and Design of Structure Dec
Practice No. 4 (week 10)	Stair Calculation and Design.
Practice No. 5 (week 13)	Facing Brick Masonry Stakeout
Practice No. 6 (week 15)	Roof Design
According to Calendar	Final Written Test
According to Calendar	Final Practice Test

Material Resources

Material	Medium
Course Syllabus Notes	Paper / Moodle
Constructive Detail Appendixes	Paper / Moodle
Implementation Photo Appendixes	Moodle / Projector
Practice Tasks	Paper / Moodle

Technical-commercial information	Moodle / Internet
Regulations Concerned	Moodle

To achieve the learning outcomes, the following activities will be carried out:

- Generic classroom activities:

? **Theoretical-practical classes:** The theoretical concepts of the subject will be explained and illustrative practical examples will be developed to support the theory when necessary.

? **Practical classes:** Practical cases will be carried out as a complement to the theoretical concepts studied.

- Non-classroom generic activities:

? Study and assimilation of the theory explained in the master classes.

? Understanding and assimilation of examples and practical cases

? Preparation of exercises and practical cases to be solved by the student

? Preparation of written continuous assessment tests and final exams.

- Supporting activities: With a mainly non-classroom nature, various activities that support the basic contents of the subject will be conducted through the virtual teaching portal (Moodle), where these activities will be monitored and sometimes customized.

The weekly schedule of the course and the assessment dates in each call will be shown on the EUPLA website

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28609>