

Teaching guide

IDENTIFICATION DETAILS

Degree:	Architecture		
Scope	Architecture, construction, building and urban planning, and civil engineering		
Faculty/School:	Higher Polytechnic School		
Course:	CONSTRUCTION III		
Type:	Compulsory	ECTS credits:	6
Year:	4	Code:	3740
Teaching period:	Seventh semester		
Subject:	Construction		
Module:	Technician		
Teaching type:	Classroom-based		
Language:	Spanish		
Total number of student study hours:	150		

SUBJECT DESCRIPTION

CONSTRUCTION III is a subject where the student must learn to constructively define architectural proposals and to develop their own architectural projects, where they must learn that construction is an inseparable fact of the project and necessary for the materialization of ideas, and to understand its process from the construction concept to the final definition. As part of the general planning of this subject, in this subject, the student must especially deepen their theoretical knowledge of architecture built with exposed concrete systems, wood systems and synthetic panel systems, and learn that each construction system has a specific technique, requirements and generates its own language that is an integral part of the final result. Through learning and constructively developing your projects, you must learn to discern how and why each decision is made in the design construction process and to understand the constructive element as a constituent part of architecture and not as an isolated fact. You will learn how to solve technical problems effectively, the suitability for the intended use and the

economic meaning of the following concept. You must know the materials, the existing technological availability together with current regulations, in order to acquire a practice and a method that lay the foundations that allow you to solve the various construction problems in your professional future and enable you to build what has not yet been built.

The student must become aware of the relevance that the decisions they make have in the community in which they live and begin to cultivate a professional ethic focused on serving society, whose starting point is first of all the conditions of proper construction in the aspects of thermal insulation, waterproofness, durability, firmness, as well as appropriate conditions from the point of view of the climate in which they are located. Once these fundamental aspects have been fulfilled, the student will learn the importance that constructive decisions have in the way people live in greater depth according to their greater maturity in this subject.

GOAL

Know, plan, solve and draw construction projects with in situ concrete systems, prefabricated concrete, wood and synthetic panel systems, from contact with the ground to the top of the building, and acquire the ability to solve all construction elements in an integrated manner in the project in accordance with the necessary technical, regulatory and habitability requirements.

The specific aims of the subject are:

- Know the materials, the fundamental concepts, the technological availability and the regulations for the application of heavy construction systems to learn how to select the most appropriate system in each case.
- Acquire the ability to develop solutions that adequately solve the technical construction problems of the architectural project in such systems from the general to the level of detail.
- Critically evaluate the above characteristics to guide and justify the decision-making of the project and thus develop own criteria that allow us to act on the object and the construction process.

PRIOR KNOWLEDGE

To follow the subject, the student must have acquired the fundamental knowledge taught in CONSTRUCTION I and CONSTRUCTION II. It will be highly advisable to have sufficient knowledge of graphic expression, both computer and manual drawing, to allow him to carry out the proper work of the subject and a project base acquired in the project subjects of the first three years, allowing him to understand the technical and design nature of construction, as well as some conceptual notions of designing structures and installations.

COURSE SYLLABUS

THEORETICAL SYLLABUS

Theme 1. Wood technology: study of structures and enclosures made of wood and their derivatives. Materials, systems, techniques, conservation and regulations together with the study of their means of execution

2.1. Wood as a construction material: materials, techniques and forms of application.

2.2. Framing systems

2.3. Systems with solid plywood (CLT) panels.

2.4. Reticular or mixed systems.

2.5. Construction solutions for wooden facades, exterior carpentry, panels and protective elements.

2.6. Wood in interior carpentry, paneling and floors.

Theme 2. Reinforced concrete technology, 'in situ', prefabricated and prestressed. Systems, techniques, dosages, conservation, application regulations, together with the study of their means of execution.

1.1. Regulations applicable to reinforced concrete structures.

1.2. Construction of reinforced concrete structures.

1.3. Reinforced concrete seen 'in situ' as an envelope, its hygrothermal suitability and the applicable regulations.

1.4. Precast structural concrete, systems and their means of execution.

1.5. Precast concrete seen as an envelope: architectural panel, GRC concrete panels and their means of execution.

1.6. Prestressed concrete, special structures, sheets and new types of concrete.

Theme 3. Lightweight ventilated façade systems with non-metallic panels. Systems, types of joints, substructure and study of their characteristics and their means of execution.

SYLLABUS OF A PRACTICAL NATURE

1. The student's construction project of a medium-sized wooden construction. The student must undertake in phases the constructive development in execution plans, from structural schemes to general sections and details.

2. The student's construction project on an existing, or unbuilt, exposed concrete building of medium scale, for which general data are known but there is no substantial constructive information. The student must undertake in phases the construction development in execution plans from structural schemes and general sections, to the level of detail.

EDUCATION ACTIVITIES

1. FACE-TO-FACE ACTIVITIES

1.1. Expository classes: Presentation of content and activities by the teacher, commentary, recommended reading, and with the participation of students in the debate and resolution of doubts about the topics proposed in class

1.2. Carrying out exercises: Solve, individually, on the blackboard or on the table exercises proposed in class to apply the fundamental knowledge received.

1.3. Project workshop: Correction in groups of different sizes of the projects that students carry out in the classroom or at home, and they clarify in the light of the exercises of their classmates and the instructions of their teachers.

1.4. Group work: I work in small groups to deepen the fundamental teaching principles and stimulate coordination capacity among students.

1.5. Tutorials:

- 1.5.1. Classroom tutoring: Attention to the class group to enhance the practical follow-up of the subject.

- 1.5.2. Group tutoring: Attention to a small group of students who need additional help to follow the subject

- 1.5.3. Personalized: Individual attention to the student with the objective of reviewing and discussing the topics presented in class and clarifying doubts that the student cannot understand in their personal study.

1.6. Evaluation: Carrying out knowledge assimilation checks throughout the course and with the greatest possible

continuity.

2. NON-FACE-TO-FACE ACTIVITIES

2.1. Preparing projects for class discussion: Design and prepare a public presentation of a proposed exercise in class.

2.2. Group work: Group design and development of works.

2.3. Theoretical and practical study: Study of the theoretical and practical contents of the program and preparation of recommended readings.

2.4. Construction visits, technical talks and visits to companies in the construction sector.

DISTRIBUTION OF WORK TIME

TEACHER-LED TRAINING ACTIVITIES	INDIVIDUAL WORK
60 Horas	90 Horas

SKILLS

Basic Skills

Students must have demonstrated knowledge and understanding in an area of study that is founded on general secondary education. Moreover, the area of study is typically at a level that includes certain aspects implying knowledge at the forefront of its field of study, albeit supported by advanced textbooks

Students must be able to apply their knowledge to their work or vocation in a professional manner and possess skills that can typically be demonstrated by coming up with and sustaining arguments and solving problems within their field of study.

Students must have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgments that include reflections on pertinent social, scientific or ethical issues

Students must be able to convey information, ideas, problems and solutions to both an expert and non-expert audience

Students must have developed the learning skills needed to undertake further study with a high degree of independence

Ability to solve problems and to take decisions.

Ability to apply procedures.

Knowledge of research methods and those pertaining to the preparation of construction projects.

An understanding of the problems involved in structural design, construction and engineering associated with building projects.

General Skills

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Ability to apply procedures.

Knowledge of research methods and those pertaining to the preparation of construction projects.

An understanding of the problems involved in structural design, construction and engineering associated with building projects.

Specific skills

Ability to apply technical and construction standards.

Ability to preserve building structures, foundations and civil works.

Adequate knowledge of conventional construction systems and their pathology.

Adequate knowledge of the physical and chemical characteristics, production procedures, pathology and use of construction materials.

Knowledge of the organization of professional offices.

LEARNING RESULTS

Conceive, plan, develop and draw complete construction projects with concrete systems and wood systems that solve the development of a project in an integrated manner, according to the required technical conditions and construction practice, from the general concept to the detailed scale, from the criteria of organizing a professional office.

Appropriately design and develop complete construction sections, integrated into the project, with concrete construction systems that meet the conditions required in the envelope, the encounter with the terrain and outdoor spaces, the upper end of the building, the interior construction elements, the integration of the construction of the structure and the resolution of the encounters between the different construction elements.

Design and develop complete construction sections, integrated into the project, of wood and panel construction systems, which meet the conditions required in the envelope, the encounter with the terrain and outdoor spaces, the upper ceiling of the building, the interior construction elements, the integration of the construction of the

structure and the resolution of the encounters between the elements.

Acquire the criteria for selecting and resolving external carpentry construction developments that meet the conditions required in the envelope by the regulations, from its conception to the level of detail.

Develop construction solutions that show coherence, rationality and economy of means, where the importance of constructive materialization and rationalization within concrete and wood construction systems is understood.

Apply and know the regulations in force and develop an ability to put into practice technical standards and logical construction principles in construction plans that allow for adequate execution and durability of buildings with concrete and wood construction systems.

Acquire the criteria for choosing suitable elements and treatments in accordance with the characteristics of the materials, their technology and their performance, in the field of architecture with concrete or wood construction systems.

Acquire the criteria for a construction practice that allows the adequate conservation of concrete construction elements and systems depending on their situation, exposure and conditioning factors.

Acquire the criteria for a construction practice that allows the adequate conservation of wooden elements and construction systems depending on their situation, exposure and conditioning factors.

Criteria for choosing the appropriate description of concrete and wood construction systems so as to allow their correct understanding, the appropriate scale, the clarity in the graphic representation of the drawings, the necessary degree of development in the description of the solutions and the necessary definition of legends, labels and dimensions.

LEARNING APPRAISAL SYSTEM

CONTINUOUS EVALUATION

This course is based on continuous evaluation. The student will demonstrate with his work his partial deliveries, his corrected autonomous exercises, his work in the classroom and general attitude towards his learning if he is qualified in the competencies that he is expected to develop in this subject. Periodically, an exercise will be carried out in relation to the contents of the course.

To pass the subject per course, it will be mandatory to submit all the exercises on time. The exercises will be graded from 0 to 10 and general corrections will be made on a regular basis. In addition, the following should be taken into account:

A.1. CRITERIA FOR APPROVING:

The student will pass per course if:

Attend at least 80% of classes if the student intends to be evaluated on a continuous basis, otherwise they will be eligible for the extraordinary call. In the case of repeat students with obvious time incompatibility, a waiver will be made on this percentage of attendance and an appropriate solution will be sought according to the subjects affected.

A.1.1 DELIVERY OF EXERCISES: 80% of the final grade

- Deliver the course exercises on the date and time indicated. An exercise is considered delivered when it meets all the basic content and format requirements indicated in the statement. Insufficient work can be compensated by other approved ones since the average established in the evaluation prevails.
- You must obtain a weighted average grade for the years between 5 and 10 to be eligible for the one approved by continuous evaluation, given their fundamental nature, regardless of the following grade percentages (A.1.2, A.1.3 and A.1.4), which will only be effective after a minimum average score of 5.
- Exercises delivered after the deadline will be graded with a maximum score of five (5). Only one overdue exercise will be admitted to the continuous evaluation. The distribution of grades will be as follows (percentages over 100% of the part corresponding to the course exercises):

Exercise 1. Student construction project on a construction project with wood and dry panel systems: 50%

Exercise 2. Student construction project on a concrete and glazed system project: 50%

A.1.2 CONSTRUCTIVE TOPIC RESEARCH WORK: 5% of the final grade.

The student researches, studies, prepares and develops a proposed constructive work and makes a public presentation in class. It can be carried out individually or integrated as part of a working group. In addition to the exhibition, the work is also delivered in digital format. Evaluation is measured as follows:

- Correct study and documentation in the preparation of the topic: 30%
- Adequate development and argument of the topic: 50%
- Expository clarity of the topic: 20%

A.1.3 COURSE FOLLOW-UP: 10% of the final grade.

This follow-up and attitude towards the subject will be measured as follows:

- Participation and active attention in exhibition classes: 10%
- Participation in short class exercises and drawings on the blackboard: 60%
- Positive student evolution throughout the course: 15%
- Timely delivery of coursework in time, form and content: 15%

A.1.4. UNIVERSITY EXTENSION ACTIVITIES: 5% of the final grade

- Collaboration, assistance and participation in university extension activities pertaining to the subject.

A.2. QUALIFICATION CRITERIA AND JOB IMPROVEMENTS

The qualification of the coursework will be subject to evaluation criteria that the student will know in advance in the statements through rubrics. The corrections of the papers before delivery will respond to the steps that the student must take, which may vary depending on where their work is located. These corrections can be made on paper or through appropriate virtual classroom resources.

Any improvement can be made by teaching, correcting and attending other corrections during the course of the practice through classes and tutoring. Any note made in class about one student's work will affect the rest; therefore, it will not be necessary to repeat to each student what should be improved if these improvements are repeatedly exposed in the context of public correction.

If a student wishes to recover an exercise not submitted on the corresponding date, it will be evaluated as delivered after the deadline and they will have the penalty indicated in section A.1.1, that is, it will be assessed as delivered out of date and will score five (5) at most. No more coursework can be improved or submitted after the due date during the continuous evaluation.

Plagiarism, as well as the use of illegitimate means in evaluation tests, will be sanctioned in accordance with those established in the Evaluation Regulations and the University's Coexistence Regulations.

B. EVALUATION IN ORDINARY AND EXTRAORDINARY CALLS

B.1. EVALUATION IN AN ORDINARY CALL

Following the indications of the Report for the Request for Verification of the Degree in Architecture, students who do not pass the course by continuous evaluation may be eligible for the ordinary call. Those students who do not reach the average grade of five (5) will have to submit all the insufficient or pending papers, which will be evaluated on the same criteria set out in the statements, and whose grade will amount to 100%. In the ordinary evaluation, sections A.1.2, A.1.3 and A.1.4 of the continuous evaluation will not be considered.

Plagiarism, as well as the use of illegitimate means in evaluation tests, will be sanctioned in accordance with those

established in the Evaluation Regulations and the University's Coexistence Regulations.

B.2. EVALUATION IN AN EXTRAORDINARY CALL

Following the indications of the Report for the Request for Verification of the Degree in Architecture, students who do not pass the course in previous calls may be eligible for the extraordinary call. Those students who do not reach the average grade of five (5) will have to submit all the insufficient or pending papers and take a final exam of the course. To carry out this exam, it will be necessary to submit all the works of the course, which will be evaluated on the criteria set out in the statements, and whose grade will represent 55% of the grade of the extraordinary call. The remaining 45% of the grade will result from a face-to-face knowledge exam in which you will be asked about the most relevant procedures of the course, usually drawn.

Plagiarism, as well as the use of illegitimate means in evaluation tests, will be sanctioned in accordance with those established in the Evaluation Regulations and the University's Coexistence Regulations.

ETHICAL AND RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE

1.- The use of any Artificial Intelligence (AI) system or service shall be determined by the lecturer, and may only be used in the manner and under the conditions indicated by them. In all cases, its use must comply with the following principles:

- a) The use of AI systems or services must be accompanied by critical reflection on the part of the student regarding their impact and/or limitations in the development of the assigned task or project.
- b) The selection of AI systems or services must be justified, explaining their advantages over other tools or methods of obtaining information. The chosen model and the version of AI used must be described in as much detail as possible.
- c) The student must appropriately cite the use of AI systems or services, specifying the parts of the work where they were used and describing the creative process followed. The use of citation formats and usage examples may be consulted on the Library website(https://www.ufv.es/gestion-de-la-informacion_biblioteca/).
- d) The results obtained through AI systems or services must always be verified. As the author, the student is responsible for their work and for the legitimacy of the sources used.

2.- In all cases, the use of AI systems or services must always respect the principles of responsible and ethical use upheld by the university, as outlined in the [Guide for the Responsible Use of Artificial Intelligence in Studies at UFV](#). Additionally, the lecturer may request other types of individual commitments from the student when deemed necessary.

3.- Without prejudice to the above, in cases of doubt regarding the ethical and responsible use of any AI system or service, the lecturer may require an oral presentation of any assignment or partial submission. This oral evaluation shall take precedence over any other form of assessment outlined in the Teaching Guide. In this oral defense, the student must demonstrate knowledge of the subject, justify their decisions, and explain the development of their work.

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

Juan Queipo de Llano Moya, Beatriz González Rodrigo, Mariana Llinares Cervera, Carlos Villagrà Fernández, Virginia Gallego Guinea Guide to Building with Wood 2010 Construction Quality Unit, Eduardo Torroja Institute of Construction Sciences, Higher Council for Scientific Research (CSIC)

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Eduardo Medina Sánchez Construction of Reinforced Concrete Structures Revised Edition 2009 Editorial Bellisco

Additional

Rubio Alonso, Jesús M^a; Rubinos Fuentes, Antonio Practical Guide to the Application of the Technical Building Code (CTE) Aenor Ediciones 2009