



Course guide

310029 - 310029 - Projects I

Last modified: 06/06/2024

Unit in charge:	Barcelona School of Building Construction	
Teaching unit:	752 - RA - Departamento de Representación Arquitectónica.	
Degree:	BACHELOR'S DEGREE IN ARCHITECTURAL TECHNOLOGY AND BUILDING CONSTRUCTION (Syllabus 2015). (Compulsory subject).	
Academic year: 2024	ECTS Credits: 4.5	Languages: Catalan, Spanish

LECTURER

Coordinating lecturer:	PEDRO SARRÓ GARCÍA
Others:	JESUS ESQUINAS DESSY - BLANCA FIGUERAS QUESADA - PEDRO SARRÓ GARCÍA

PRIOR SKILLS

The student must have these abilities:
Know the architectural graphic language.
Draw plans with informatic tools or traditional methods.
Determine the stresses diagrams of the structures.
Calculate reinforced concrete sections suppressed to different stresses.
Measure manifolds of rainwater and waste water.
Define and write construction units for its measuring.

REQUIREMENTS

Expressió Gràfica I, y II
Construcció I, II y III
Estructures I, II y III
Instal·lacions I
Topografia i replantejaments
Pressupostos i control de costos

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. FE-27 Ability to apply the necessary advanced tools for the resolution of the parts which the technical project implies and its management.
2. FE-28 Aptitude to write technical projects of constructions, which don't require architectural projects, as well as projects of demolition and design.
3. FE-29 Aptitude to write documents which are part of execution projects made in a multidisciplinary form
4. FE-30 Ability of analysis of the execution projects and their transfer to the execution in constructions.
5. FE-31 Knowledge of the functions and responsibilities of the agents which intervene in the construction and their professional or managerial organisation, as well as the administrative, managerial and processing procedures.
6. FE-32 Knowledge of the professional organisation and the basic procedures in the construction field and the promotion.

Transversal:

7. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

TEACHING METHODOLOGY

The subject will be developed in three blocks, according to the schedule and the project of each four-month term. During the scheduled days there will be explained the specific objectives to develop in each block and a summary of the required theory for the technical and graphic resolution of the project.

The rest of days will be assigned to the work of the students for achieve the specific objectives, in groups guided by a professor, keeping in mind the order of the scheduled works. Every practice day there will be done the activity 3.

The groups will have a maximum of 5 members.

In each session the team will discuss the exercise proposed as a monitoring of the work.

LEARNING OBJECTIVES OF THE SUBJECT

At the end of the course, the students should be able to:

- . Determine the graphic content of a technical project.
- . Explain the meaning of the construction components, details and systems graphically represented in a technical project.
- . Connect the elements represented on the plan with its constructive execution.
- . Define each one of the construction lots and the construction components represented in a technical project.
- . Identify in each plan or project document, the essential technical data for the implementation in the construction.
- . Use the graphic techniques as the common language in the construction and in a contractual document like the project.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	22,5	20.00
Hours large group	9,0	8.00
Hours small group	13,5	12.00
Self study	67,5	60.00

Total learning time: 112.5 h

CONTENTS

(ENG) BLOC 1 INTRODUCCIÓ AL PROJECTE TÈCNIC. DESCENS DE CÀRREGUES I FORJATS.

Description:

In this content the students work:

1. The execution project: Working agents, the organization. Administration processes, management and processing. Knowledge in professional organization and basic processing.
2. Analysis and study of the basic project.
3. Analyze the loads of a building, study its structure.
4. Solve the slabs (uni-directional or bi-directional).

Related activities:

Activity 1. Deliverable Block 1, in group.

Activity 2. Realisation of a questionnaire about the theory. Individually.

Activity 3. Daily graphic exercise, individually.

Full-or-part-time: 37h 30m

Theory classes: 3h

Practical classes: 12h

Self study : 22h 30m



(ENG) BLOC 2 ESTRUCTURES PORTANTS. FORMIGÓ ARMAT I ESCALES

Description:

In this content the students work:

BLOCK 2

1. Solve the capacity structure Fe, HA, Fàbrica.
2. Solve the vertical communication (Stairs, ramps, elevators).

Related activities:

Activity 1. Deliverable Block 2, in groups.

Activity 2. Realisation fo a questionnaire about the theory. Individually.

Activity 3. Daily graphic exercise, individually.

Full-or-part-time: 37h 30m

Theory classes: 3h

Practical classes: 12h

Self study : 22h 30m

(ENG) BLOC 3 FONAMENTACIONS I MURS DE CONTENCIÓ. SANEJAMENT

Description:

In this content the students work:

BLOCK 3

1. Solve the foundations, the cantainment walls and the sanitation.
2. Replan the foundations, excavations and land movement.

Related activities:

Activity 1. Deliverable Block 3 in groups.

Activity 2. Realisation of a questionnaire about the theory. Individually.

Activity 3. Daily graphic exercise, individually.

Full-or-part-time: 37h 30m

Theory classes: 3h

Practical classes: 12h

Self study : 22h 30m

ACTIVITIES

(ENG) PROVES EN GRUP D'AVALUACIÓ CONTÍNUA (BLOC 1) A REALITZAR LA SETMANA 4 O 5

Description:

Realisation in groups of a technical project of the constructive part exposed in the corresponding block, presented the scheduled day and defended by the group members.

Specific objectives:

At the end of the activity, the student should be able to:

Understand the different graphic and technical elements which are necessary for the correct execution of an unidirectional slab.

Analyze the structure of a building and do the corresponding load descent.

Understand a building graphically projected by other technician for developing the corresponding execution project.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Wording available in ATENEA.

Bibliography also available in ATENEA (Regulations, etc.).

Delivery:

Delivery and defense of the project corresponding to the designated construction phase.

This activity will have a worth of 60% in the mark of the Block-1 (The Block-1 represents the 30% of the final mark).

Full-or-part-time: 2h 30m

Practical classes: 2h 30m

(ENG) PROVES EN GRUP D'AVALUACIÓ CONTÍNUA (BLOC 2) A REALITZAR LA SETMANA 8 O 9

Description:

Realisation in groups of a technical project of the constructive part exposed in the corresponding block, presented the scheduled day and defended by the group members.

Specific objectives:

At the end of the activity, the student should be able to:

Understand the different graphic and technical elements which are necessary for the correct execution of the capacity structure of a building.

Know the tools and the software necessary for the resolution of the calculation of stresses in a structure.

Choose the most suitable solution for the chosen building.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Wording available in ATENEA.

Bibliography also available in ATENEA (Regulations, etc.).

Delivery:

Delivery and defense of the project corresponding to the designated construction phase.

This activity will have a worth of 60% in the mark of the Block-2 (The Block-2 represents the 30% of the final mark).

Full-or-part-time: 2h 30m

Practical classes: 2h 30m



(ENG) PROVES EN GRUP D'AVALUACIÓ CONTÍNUA (BLOC 3) A REALITZAR LA SETMANA 12 O 13

Description:

Realisation in groups of a technical project of the constructive part exposed in the corresponding block, presented the scheduled day and defended by the group members.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Wording available in ATENEA.

Bibliography also available in ATENEA (Regulations, etc.).

Delivery:

Delivery and defense of the project corresponding to the designated construction phase.

This activity will have a worth of 60% in the mark of the Block-3 (The Block-3 represents the 40% of the final mark).

Full-or-part-time: 2h 30m

Practical classes: 2h 30m

(ENG) PROVES INDIVIDUALS D'AVALUACIÓ CONTÍNUA (BLOC 1) A REALITZAR LA SETMANA 4 O 5

Description:

Individual realisation at class of an exercise of the topic related with the corresponding block.

Specific objectives:

At the end of the activity, the students should be able to:

Understand the different questions of the exercise for distinguish the appropriate answer.

To have an agility in fast calculation of structural elements.

To have certainty of the knowledge acquired in the concepts defined as answers.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Explanations received during the corrections of the different group works.

It can be a test or not, the student must be prepared to do freehand drawing.

Delivery:

Resolution by the student of the exercise, which the professor will correct and will post the mark in ATENEA.

This activity will have a value of 30% of the mark of the Block-1 and the Block-1 represents a 30% of the final mark.

Full-or-part-time: 0h 15m

Practical classes: 0h 15m



(ENG) PROVES INDIVIDUALS D'AVALUACIÓ CONTÍNUA (BLOC 2) A REALITZAR LA SETMANA 8 O 9

Description:

Individual realisation at class of an exercise of the topic related with the corresponding block.

Specific objectives:

At the end of the activity, the students should be able to:

Understand the different questions of the exercise for distinguish the appropriate answer.

To have an agility in fast calculation of structural elements.

To have certainty of the knowledge acquired in the concepts defined as answers.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Explanations received during the corrections of the different group works.

It can be a test or not, the student must be prepared to do freehand drawing.

Delivery:

Resolution by the student of the exercise, which the professor will correct and will post the mark in ATENEA.

This activity will have a value of 30% of the mark of the Block-2 and the Block-2 represents a 30% of the final mark.

Full-or-part-time: 0h 15m

Practical classes: 0h 15m

(ENG) PROVES INDIVIDUALS D'AVALUACIÓ CONTÍNUA (BLOC 3) A REALITZAR LA SETMANA 12 O 13

Description:

Individual realisation at class of an exercise of the topic related with the corresponding block.

Specific objectives:

At the end of the activity, the students should be able to:

Understand the different questions of the exercise for distinguish the appropriate answer.

To have an agility in fast calculation of structural elements.

To have certainty of the knowledge acquired in the concepts defined as answers.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Explanations received during the corrections of the different group works.

It can be a test or not, the student must be prepared to do freehand drawing.

Delivery:

Resolution by the student of the exercise, which the professor will correct and will post the mark in ATENEA.

This activity will have a value of 30% of the mark of the Block-3 and the Block-3 represents a 40% of the final mark.

Full-or-part-time: 0h 15m

Practical classes: 0h 15m



(ENG) EXERCICI GRAFIC INDIVIDUAL DIARI (BLOC 1)

Description:

Realisation at class each practice day of a graphic exercise of the topic related with the corresponding Block.

Specific objectives:

At the end of the activity, the students should be able to:

Understand the different questions of the exercise wording.

Be sure about the constructive elements and its working inside the construction.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Explanations received during the corrections of the different group works.

The student must be prepared to do freehand drawing.

Delivery:

Resolution by the student of the exercise, which the professor will correct with them the same practice day.

This activity will have a value of 10% of the mark of the Block-1 (The Block-1 represents a 30% of the final mark).

Full-or-part-time: 0h 15m

Theory classes: 0h 15m

(ENG) EXERCICI GRAFIC INDIVIDUAL DIARI (BLOC 2)

Description:

Realisation at class each practice day of a graphic exercise of the topic related with the corresponding Block.

Specific objectives:

At the end of the activity, the students should be able to:

Understand the different questions of the exercise wording.

Be sure about the constructive elements and its working inside the construction.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Explanations received during the corrections of the different group works.

The student must be prepared to do freehand drawing.

Delivery:

Resolution by the student of the exercise, which the professor will correct with them the same practice day.

This activity will have a value of 10% of the mark of the Block-2 (The Block-2 represents a 30% of the final mark).

Full-or-part-time: 0h 15m

Theory classes: 0h 15m



(ENG) EXERCICI GRAFIC INDIVIDUAL DIARI (BLOC 3)

Description:

Realisation at class each practice day of a graphic exercise of the topic related with the corresponding Block.

Specific objectives:

At the end of the activity, the students should be able to:

Understand the different questions of the exercise wording.

Be sure about the constructive elements and its working inside the construction.

Material:

Notes of the topic available (PowerPoint) in ATENEA.

Explanations received during the corrections of the different group works.

The student must be prepared to do freehand drawing.

Delivery:

Resolution by the student of the exercise, which the professor will correct with them the same practice day.

This activity will have a value of 10% of the mark of the Block-3 (The Block-3 represents a 40% of the final mark).

Full-or-part-time: 0h 15m

Theory classes: 0h 15m

GRADING SYSTEM

Activity 1

$$F = (0.3 \cdot N1) + (0.3 \cdot N2) + (0.4 \cdot N3)$$

F = Final mark (10 points)

N1 = First mark (10 points)

N2 = Second mark (10 points)

N3 = Third mark (10 points)

Each mark (N) consist on a 30% obtained in an individual evaluation (questionnaire), a 10% of the individual graphic exercise and a 60% corresponding to the correction of the group work (also valued by the students).

For attending the questionnaire and the exposition it is essential that the team have corrected the daily works at class.

The student will pass the subject if he/she gets 5 points of a maximum of 10.

Activity 2

About 10:

10 questions about the given topics at class.

Correct answer: +1,0

Wrong answer: -0,5

NS/NC: 0,0

Activity 3

About 10 (each exercise)

A drawing of a construction detail.

Generic competences:

The generic competences of this subject are Type 3 and so that they will be evaluated: In this course the evaluation won't be numerical otherwise it will be ABC valuation being "A" the best qualification and "C" the worst.

The competence will be evaluated in each delivery (Block 1, 2 or 3) having finally three qualifications and being the last the only which will count. This evaluation can be seen by the students during the course in the qualifications section in Atenea.



EXAMINATION RULES.

Block delivery:

Printed or hand write topics, delivered in plans with the format ordered by each professor.

The Nº of plans and the calculation report will be decided by the students according to the professor.

There will be given the corresponding CD with all the plans and the reports.

BIBLIOGRAPHY

Basic:

- Jiménez Montoya, P. ; García Messeguer, A. ; Morán Cabré, F. Hormigón armado. 15a ed. Barcelona: Gustavo Gili, 2009.
- Calavera Ruiz, José. Manual de detalles constructivos en obras de hormigón armado : edificación obras públicas. Madrid: INTEMAC, 1993.
- Neufert, P. ; Neff, L. Casa, vivienda, jardín : el proyecto y las medidas en la construcción. 2a ed. Barcelona: Ed Gustavo Gili, 2007.
- Baud, Gérard. Tecnología de la construcción. Barcelona: Ed. Blume, 1994.
- Calavera Ruiz, José. Muros de contención y muros de sótano. 3a ed. Madrid: INTEMAC, 2001.

Complementary:

- Calavera Ruiz, José. Cálculo de estructuras de cimentación. 4a ed. Madrid: INTEMAC, 2000.
- Rodríguez-Borlado, Ramiro. Prontuario de estructuras metálicas. 6a ed. Madrid: CEDEX, 2002.
- España. Código Técnico de la Edificación. CTE-DB-Seguridad Estructural Fabrica, CTE-DB-Seguridad Estructural Acciones en la edificación. 2a ed. Madrid: Ministerio de Vivienda : Boletín Oficial del Estado, 2008.
- España. Ministerio de Fomento. EHE-08 : instrucción de Hormigón Estructural : con comentarios de los miembros de la Comisión Permanente del Hormigón. 2a ed. Madrid: Madrid: Ministerio de Fomento, 2009.

RESOURCES

Other resources:

www.bibliotecnica.upc.edu