28744 - Projects

Información del Plan Docente

Academic Year	2017/18
Faculty / School	175 - Escuela Universitaria Politécnica de La Almunia
Degree	423 - Bachelor's Degree in Civil Engineering
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

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

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The current subject "Project design" is organized into five main groups of activities: two of them run by the teacher (lectures and problems), another carry out by the students and teacher jointly, a forth one consisting of self-study and finally the assessment written test:

- Lectures: in which the teacher will explain the theorical concepts of the subject topics.
- Practical sessions: The teacher will explain the practical application on the concepts developed at the theorical

lectures, resolving practical problems. This session will take place at the classroom or at the computer laboratory.
- Tutorship practical sessions: Using technical software at the computer laboratory students will resolve, individually or in groups of two of them, the practical applications of concepts detailed in above paragraphs. Depending on the duration of these practices it can be only initiated at class time and later on finished as a non-class activity bases.
- Assessment written test: Students will demonstrate the knowledge gained through two not mutually exclusive methods. One by continuing assessment throughout the course or, if these midterms tests are not passed successfully, a global written test on two calls.
- Personal study: Non-class activities in which students have to study the topics learnt at the class activities in order to understand and assimilate the theory taught in lectures and train the practical cases solved in the practical classes and prepare the written test.

Besides these activities there will be individual tutorials based on personalized attention by the teacher in order to help and resolve doubts and questions about the specific areas in which students have found more difficulties to be understood.

5.2.Learning tasks

To the activity groups mentioned at the previous section the following workload has been assigned:

- Lectures / Theoretical classes 11 hours
- Practical classes 2 hours
- Tutorship practical sessions 38 hours
- Assesment written test 9 hours
- Personal study 90 hours

According this hours distribution a total 150 hours workload is reached, corresponding to the 6 credits ECTS that the subject has assigned during the second quarter of the third course of the Civil Engineer Bachellor's degree.

These 150 hours involve 15 week of class.

Individual tutorials are scheduled in a two hours per week basis.

5.3.Syllabus

To reach the subject aims, this one is structured in 9 topics.

The detailed content of these topics is as follows:

TOPIC 1. GENERAL ASPECTS OF A CIVIL ENGINEERING PROJECT

1.1. The civil Works as an instrument of society

1.2. Civil Works requirements

1.3. Civil Works' concept and its implementation: different types of project design and studies referred at the Road & Railway Laws

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1.4. Project: concept and definition

1.5. Civil corks life cycle and its influence on its concept and design

1.6. Basic elements to be consider into a civil Works project design

1.7. Terrain forced expropriation law

TOPIC 2. PROJECT DESIGN CONTRACT CONCERNING TO PUBLIC WORKS

2.1. Legislation concerning to public sector contracting

2.2. Process / sequence of the tender and award of public contracts

2.3. A project design as a type of public contract

2.4. Requirement to fulfil in order to contract a project design

2.5. Preparatory actions previous to a work contract

2.6. Award of project design contracts

2.7. Specific contracting law articles concerning services contracts

TOPIC 3. PREVIOUS STUDIES: FEASIBILITY STUDIES

3.1. Introduction

3.2. Feasibility studies aims

3.3. General methodology

3.3.1. General conditions, content and format

3.3.2. Input data and project environment knowledge

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3.3.3. Technical study - Alternatives

3.3.4. Economic study

3.3.5. Environmental study

3.3.6. Other ítems to consider

3.4. Tools supporting decisión making

3.5. Multicriteria decisión models. General features

3.6. Method of "Weighted averages approach"

3.7. PRESS method

3.8. Other multicriteria methods

TOPIC 4. PROJECT DESIGN STANDARD DOCUMENTS

4.1. Introduction

4.2. Basic concept on standarization

4.3. Process to develop an European standard (UNE)

4.4. Purpose and background of the "Professional collegiate authorisation"

4.5. Origin and rationale of the standards series 157000

4.6. The AEN / CTN 157 committee "Proyects"

4.7. UNE 157001

4.7.1. Rationale, purpose and scope

4.7.2. General requirements

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4.7.3. Project design basic documents content

4.8. The family of UNE 157001 standards

4.9. Conclusions

TOPIC 5. DRAWINGS

5.1. Introduction

5.2. Designing

5.3. Formal expression

5.3.1. Outline

5.3.2. Standard formats

5.3.3. Drawing data box

5.4. Delineation

5.4.1. Dimension data

5.4.2. Labeling

5.4.3. Scales

5.5. General content

5.6. Specific content depending on drawing topics

5.6.1. Situation

5.6.2. Work overview / general definition

5.6.3. Setting out top view

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5.6.4. General top view

5.6.5. Longitudinal diagram

5.6.6. Standard section

5.6.7. Cross sections

5.6.8. Structures

5.6.9. Replacement of affected services

5.6.10. Expropiations

TOPIC 6. SPECIFICATION

6.1. Introduction

6.2. Specification porpous

6.3. Specification structure

6.4. Specification scope

6.5. Normative

6.6. Description of the works

6.7. Materials

6.8. Facilities and equipment

6.9. Execution of the works

6.10. Quality assurance

6.11. Measurement and evaluation

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6.12. Other specifications

6.13. Particular site Works conditions

TOPIC 7. MEASUREMENTS, VALUATIONS AND WORKS ESTIMATES

7.1. Introduction

7.2. Works units

7.2.1. Definition and its writting

7.2.2. Definitions examples

7.3. Measurements

7.3.1. Auxiliary measurements

7.3.2. Measurements of the work units

7.3.3. Measurement examples

7.3.4. Linking with the work schedule

7.3.5. Ratios measurement

7.4. Price calculation

7.4.1. Stages

7.4.2. Type of costs

7.4.3. Workforce

7.4.4. Materials

7.4.5. Machinery

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7.4.6. Indirect costs

7.4.7. Auxiliary prices

7.4.8. Unit prices

7.4.9. Lump sum payment units

7.5. Prices lists

7.5.1. Unit prices list

7.5.2. Broken down prices list

7.5.3. Price ratios

7.6. Works estimates

7.6.1. Partial and chapters estimates

7.6.2. Quality assurance and health and safety estimates

7.6.3. Woks estimates global sum

7.6.4. Works estimates for public employer understanding

TOPIC 8. QUALITY PLAN OF A PROJECT

8.1. Quality concept

8.2. ISO 9000

8.3. Quality assurance plan of a work

8.4. Quality assurance plan of a project

8.5. Final thoughts

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TOPIC 9. THE PROJECT REPORT AND ITS ANNEXES

9.1. Projects documents and their interrelationships

9.2. The project document No. 1

9.2.1. Normative

9.2.2. Content and overall structure

9.2.3. Relationship with previous studies

9.3. Project report

9.3.1. Structuring proposal

9.3.2. Contenido

9.3.3. Variantes

9.4. Project report annexes

9.4.1. Annexes structuring

9.4.2. Basic information annex

9.4.3. Solutions study annex

9.4.4. Technical and constructive annexes

9.4.5. Economical and Time of phases completion annexes

9.4.6. Supplementary annexes

9.4.7. Odd annexes

9.4.8. Relevant annexes

9.5. Final thoughts

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For the practical learning of the theorical content of the subject the following projects will be carry out by the students synchronized in time with the theorical contents:

1. Road
2. Sanitation pipeline network or irrigation ditch
3. Water supply network and irrigation
4. Bridge abutment or concrete work

5.4.Course planning and calendar

Planning

The theorical and practical workload of the different topics is distributed according the table below:

Nº	TEMA	T	P	PT	E	TI	TOTAL
1	GENERAL ASPECTS OF A CIVIL ENGINEERING PROJECT	2				1,5	3,5
2	PROJECT DESIGN CONTRACT CONCERNING TO PUBLIC WORKS	2				5	7
3	PREVIOUS STUDIES: FEASIBILITY STUDIES	1					1
4	PROJECT DESIGN STANDARD DOCUMENTS	1				1.5	2,5
5	DRAWINGS	1		16		23	40

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	Written assesment test I				2		2
6	SPECIFICATION	1		3		12	16
7	MEASUREMENTS, VALUATIONS AND WORKS ESTIMATES	2	3	10		37	52
	Written assesment test II				2		2
8	QUALITY PLAN OF A PROJECT	1		3		4	8
9	THE PROJECT REPORT AND ITS ANNEXES	1		3		5	9
	Written assesment test III				2		2
	Final Written assesment test				4		4
		12	2	35	10	90	150

S.- Theorical sesions / lectures

P.- Practical sesions /Problems

PT.- Computer lab workshop

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E.- Written assesment test

TI.- Personal study

DESIGNATION OF SESSIONS ACCORDING TO THE WORKLOAD

Nº	TEMA	T	P	PT	E
0	SUBJECT INTRODUCTION AND LEARNING AIMS	S-011			
1	GENERAL ASPECTS OF A CIVIL ENGINEERING PROJECT	S-111			
2	PROJECT DESIGN CONTRACT CONCERNING TO PUBLIC WORKS	S-212 S-222			
3	PREVIOUS STUDIES: FEASIBILITY STUDIES	S-311			
4	PROJECT DESIGN STANDARD DOCUMENTS	S-411			
5	DRAWINGS	S-511		PT-5116 PT-5216 PT-5316 PT-5416	

				PT-5516 PT-5616 PT-5716 PT-5816 PT-5916 PT-51016 PT-51116 PT-51216 PT-51316 PT-51416 PT-51516 PT-51616	
	Written assesment test I				EV-I EV-I
6	SPECIFICATION	S-611		PT-613 PT-623 PT-633	
7	MEASUREMENTS, VALUATIONS AND WORKS ESTIMATES	S-712 S-722	P-713 P-723 P-733	PT-7110 PT-7210 PT-7310 PT-7410	

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				PT-7510 PT-7610 PT-7710 PT-7810 PT-7910 PT-71010	
	Written assesment test II				EV-II EV-II
8	QUALITY PLAN OF A PROJECT	S-811		PT-813 PT-823 PT-833	
9	THE PROJECT REPORT AND ITS ANNEXES	S-911		PT-913 PT-923 PT-933	
	Written assesment test III				EV-III EV-III
	Final Written assesment test				EV-F-I EV-F-I EV-F-I EV-F-I

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TOTAL OF SESSIONS	11	12	3	35

(Eg. Designation meaning: PT-7210.- Tutorial practice corresponding to the topic 7, sesión 2 of 10)

CALENDAR

HORA	LECTURES	PRACTICAL	TUTORIAL SESSIONS	ASSESSMENT WRITTEN TEST
1	S-011			
2	S-111			
3	S-212			
4	S-222			
5	S-311			
6	S-411			
7	S-511			
8			PT-5116	
9			PT-5216	
10			PT-5316	
11			PT-5416	
12			PT-5516	

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13			PT-5616	
14			PT-5716	
15			PT-5816	
16			PT-5916	
17			PT-51016	
18			PT-51116	
19			PT-51216	
20			PT-51316	
21			PT-51416	
22			PT-51516	
23			PT-51616	
24				EV-I
25				EV-I
26	S-611			
27			PT-613	
28			PT-623	
29			PT-633	
30	S-712			
31	S-722			
32		P-713		

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33		P-723		
34		P-733		
35			PT-7110	
36			PT-7210	
37			PT-7310	
38			PT-7410	
39			PT-7510	
40			PT-7610	
41			PT-7710	
42			PT-7810	
43			PT-7910	
44			PT-71010	
45				EV-II
46				EV-II
47	S-811			
48			PT-813	
49			PT-823	
50			PT-833	
51	S-911			
52			PT-913	

53			PT-923	
54			PT-933	
55				EV-III
56				EV-III
57				EV-F-1
58				EV-F-1I
59				EV-F-1II
60				EV-F-1V

5.5.Bibliography and recommended resources

Basic biblyography

- Organización y gestión de proyectos y obras de los autores Germán Martínez Montes y Eugenio Pellicer Almiñana (Editorial Mc Graw Hill).
- Proyectos en licitación publicados en la página web oficial del Ministerio de Fomento.
- Valoración de obras en Ingeniería civil (Gonzalo de Fuentes Bescos)
- Pliego de prescripciones técnicas para obras de carretera y puentes (PG-3; MFOM)
- Real Decreto Legislativo 3/2011 por el que se aprueba el texto refundido de la Ley de Contratos del Sector Público. (TRLCSP) (BOE núm 276 ; 16nov2011)
- Presto . Tercera Edición. (Mc Graw Hill; R. de Benito Arango y A.J. Sánches Granda)
- Autocad aplicado a la topografía (Editoríal Politécnica de Valencia; Joaquín Gaspar Mora Navarro) o la nueva versión "Autocad aplicado a la ingeniería civil"

Complementary bibliografy

- Aspectos a considerar en la redacción de estudios y proyectos de obras civiles. Cuadernos CICCP núm. 16.
- Procedimientos generales de construcción y organización de obras de Antonio Lara Galera (Editorial Cuadernos ES ICCP Madrid).