

Academic Year/course: 2021/22

## 28780 - Measurements and Budgets

### Syllabus Information

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**Academic Year:** 2021/22

**Subject:** 28780 - Measurements and Budgets

**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:** Optional

**Module:**

## 1. General information

### 1.1. Aims of the course

Provide the students with the necessary skills to carry out an adequate economic management of the works, from the point of view of the budget, consistent with their professional responsibilities.

These 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.

8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.

12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

### 1.2. Context and importance of this course in the degree

The subject of Measurements and Budgets means an essential cornerstone for the Graduate in Civil Engineering. These graduates have responsibilities related to measurements and work budgets. In addition, due to the high level of qualification in this field, European countries demand this type of professionals as they are knowledgeable in both technical and economic areas of the building process.

### 1.3. Recommendations to take this course

High level of knowledge in constructive solutions as well as building processes and the different systems, acquired in the subjects of Building, Construction Equipment, Planning, Procedures, Management and Organisation and Structures.

## 2. Learning goals

### 2.1. Competences

**Passing this course, the student will acquire next competences (according to the Degree verification memory)**

-That the students have demonstrated to possess and understand knowledge in an area of study that begins at the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that they involve knowledge from the forefront of their field of study.

-That the students know how to apply their knowledge to their work or vocation in a professional way and possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.

-That students have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature.

- That students can transmit information, ideas, problems and solutions to both a specialized and unspecialized audience.
- That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.
- Ability to organize and plan.
- Ability to solve problems.
- Ability to make decisions.
- Aptitude for oral and written communication in the native language.
- Capacity for analysis and synthesis.
- Information management capacity.
- Ability to work in a team.
- Ability for critical reasoning.
- Ability to work in an interdisciplinary team.
- Ability to work in an international context.
- Improvisation and adaptation capacity to face new situations.
- Leadership aptitude.
- Positive social attitude towards social and technological innovations.
- Ability to reason, discuss and present ideas.
- Ability to communicate through words and images.
- Ability to search, analyze and select information.
- Ability for autonomous learning.
- Know and understand respect for fundamental rights, equal opportunities between women and men, universal accessibility for people with disabilities, and respect for the values of the culture of peace and democratic values.
- Promote entrepreneurship.
- Knowledge of information and communication technologies.
- Basic knowledge of the use and programming of computers, operating systems, databases and computer programs with application in engineering.
- Knowledge of the essential topographic techniques to obtain measurements, form plans, establish layouts, take defined geometries to the ground or control movements of structures or earthworks.
- Knowledge of construction procedures, construction machinery and techniques for organizing, measuring and evaluating works.

## 2.2. Learning goals

**The student, to pass this course, must demonstrate the following results ...**

Organizational and planning skills.

Capacity to solve problems.

Ability to make decisions.

Aptitude for oral and written communication in the native language.

Capacity for analysis and synthesis.

Ability to manage information.

Capacity for teamwork.

Capacity for critical reasoning.

Ability to work in an interdisciplinary team.

Ability to work in an international context.

Improvisation and adaptation capacity to face new situations.

Leadership aptitude.

Positive social attitude towards social and technological innovations.

Ability to reason, discuss and present your own ideas.

Ability to communicate through words and images.

Ability to search, analyze and select information.

Capacity for independent learning.

Possess and understand knowledge in an area of study that starts from the general secondary education base, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the avant-garde. from your field of study.

Apply their knowledge to their job or vocation in a professional way and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and problem solving within their area of study.

Ability to collect and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature.

Transmit information, ideas, problems and solutions to a specialized and non-specialized audience.

Develop those learning skills necessary to undertake further studies with a high degree of autonomy.

### 2.3. Importance of learning goals

Your learning will contain the appropriate tools and means that allow you to prepare the necessary documents, interpret those made by other professionals, have the capacity to modify and improve on pre-established criteria, and in any case propose corrective factors that optimize the process.

## 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:

#### **Continuous assessment:**

characterized by the obligation to take and pass practical tests, continuous assessment exercises and academic work proposed in the subject, within the deadlines established for this purpose. In this case, the student will choose up to 100% of the grade for continuous assessment, passing each and every one of the proposed exercises.

#### **Non-continuous assessment:**

characterized by not taking or not passing the practical tests, partial exams or academic work proposed in the subject. The student must compulsorily take a final exam consisting of theory and practice. The deadline and mode of delivery of practical tests and academic work will be indicated in the planning of the subject.

## 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 lectures, practice sessions, tutorials, and autonomous work and study.

A strong interaction between the teacher-student will be promoted. 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.

If classroom teaching were not possible due to health reasons, it would be carried out on-line.

## 4.2. Learning tasks

This course is organized as follows:

- **Lectures:** Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamentals, structuring them in topics and or sections, interrelating them.
- **Practice sessions.** 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:** Carried out giving individual, personalized attention with a teacher from the department, these tutorials may be on-site or online.
- **Autonomous work and study.** The students solve a variety kind of practical activities on their own, based on theoretical classes.
  - 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, preparation of summaries and reports.
  - Preparation of the written tests for continuous assessment and final exams.

This course has 6 ECTS credits, which represents 150 hours of student work in the course during the trimester, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the course file in the Accreditation Report of the degree, taking into account the level of experimentation considered for this course is moderate.

Activities Hours per week: Lectures 2 / Practice 2 / Other activities 6

## 4.3. Syllabus

Theoretical content

Tema 1	Process Agents
Tema 2	Building Engineer and building economy
Tema 3	Budgeting general terms
Tema 4	Project contents
Tema 5	Construction work units
Tema 6	The Price
Tema 7	The Costs
Tema 8	Public award process
Tema 9	Construction process
Tema 10	Payment process and models
Tema 11	Software
Tema 12	Construction units valuation

Practice

Each topic to be developed during the course is associated with practical exercises to be carried out in class or as self work outside class hours.

#### **4.4. Course planning and calendar**

The course has 6 ECTS credits, which represents 150 hours of student work in the subject during the trimester, in other words, 10 hours per week for 15 weeks of class. This includes 2 hours of lectures, 2 hours of practice sessions and 6 of other activities every week.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of EUPLA website and Moodle.

#### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28624>