



Universitat de Lleida

DEGREE CURRICULUM

TECHNICAL PROJECTS

Coordination: CABALLER FOSSAS, VICENT

Academic year 2021-22

Subject's general information

Subject name	TECHNICAL PROJECTS			
Code	102300			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Mechanical Engineering	4	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	3		3
	Number of groups	2		1
Coordination	CABALLER FOSSAS, VICENT			
Department	COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING			
Important information on data processing	Consult this link for more information.			
Language	Catalán			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
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Subject's extra information

The subject TECHNICAL OFFICE provides an approach to the profession of financial engineering by applying the knowledge acquired in other disciplines that are taught during the previous years of the career. This makes an approach to the reality of the profession. The final goal is for the student to be able to apply multidisciplinary knowledge acquired during previous courses in engineering degree.

This course requires an **active and receptive attitude** from the student (including the analytical and critical part of anyone who applies the technique and must make decisions). **Students must contribute providing creativity and initiative.**

Learning objectives

In the subject TECHNICAL OFFICE is expected to learn a general idea of drafting, development, project management and technical work from a theoretical and practical point of view, approaching them to the labour reality.

In this course is expected the student to understand the concept of Technical Office (where they develop technical work) and relate it to Engineering Projects.

The complexity of projects and objectives that they are expected to achieve go increasing daily, which has created new ways of working, innovations in the methods of management, planning and administration.

Organization where the aim is not only to project in a technical sense it must be able to combine the available resources in order to achieve better performance.

Competences

Degree Specific Skills:

The student to understand the reality of the profession of engineer, competences and responsibilities in the development of the profession.

The student to understand the definition, structure and functioning of the Technical Offices.

To initiate the student in organization, planning, implementation and project management.

To know the different types of technical work that the engineer can perform and methodology for developing them.

To know the different criteria for the preparation of technical documents.

To know the legislative that affects the development of the profession, especially the specialty of mechanics. Systems for administrative processing of projects and / or technical documents.

To have notions about the tasks of project management in aspects of planning and management.

Degree cross skills:

Create the need to teamwork and give student this capacity, comprising part of team, enhancing multidisciplinary.

Motivate students to achieve a minimum level of autonomy at work and give students capacity to apply knowledge with respect to society and the environment.

To try the student is able to enjoy learning and understanding that this profession requires training throughout professional life.

To stimulate the student's ability to solve technological problems and defend the solutions adopted.

Analysis and synthesis capacity in the decisions and applications of science and technology.

Subject contents

Unit 1

Presentation of the subject (programming, evaluation) and legislation degree. Brief history of engineering.

Unit 2

Legislation and technical regulations. Safety regulations. Application design and execution of the project. Processing of projects and technical documentation.

2.1 INTRODUCTION

2.2 STANDARDS

2.2.1.- Basic criteria for standardization.

2.2.2.- What is a standard?

2.2.3.- Technical drawing and standardization.

2.2.4.- Classification of standards.

2.3 DOCUMENTS TO OBTAIN PERMITS AND LICENSES.

2.3.1.- Characteristics of applicable legislation.

2.3.2.- Industrial installations processing.

2.3.3.- Licenses granted by councils

2.3.3.1- Building permission.

2.3.3.2.- Building permits (major works).

2.3.3.3.- Building permits (minors ordinary works).

2.3.3.4.- Building permits (minors works simplified).

2.3.3.5.- Activities license.

2.4 LEGALITY PROJECT

2.5 BASIC CONCEPTS OF URBAN PLANNING.

2.5.1.- Introduction.

2.5.2.- Spatial planning

2.5.3.- Exercise of urban competitions.

2.5.4.- Urban law and land classification

2.6.- INDUSTRIAL LOCATION

ANNEX 1

REGULATORY RECORD.

Unit 3

The technical office of projects. Documents of the professional activity of the Engineering and brief description of them.

3.1 TECHNICAL OFFICE. DEFINITION.

3.2 KIND OF TECHNICAL OFFICES.

3.2.1.- According to their position in the organization chart of the company.

3.2.2.- In function.

3.2.3.- According to their specialty.

3.2.4.- According to their dependency.

3.2. 5- According to the size.

3.3 THE ENGINEERING COMPANY.

3.4 FREELANCE PROFESSION.

3.5 WORKS THAT CAN PERFORM IN A TECHNICAL OFFICE / ENGINEERING.

3.5.1.- Technical reports and similar work.

3.5.1.1.- Format technical reports.

3.5.2.- Valuations, appraisals and budgets.

3.5.3.- Previous studies or of viability.

3.5.4.- Drafts and projects.

3.5.5.- Application and selection of offers.

3.5.6.- Supervision of the execution and start up.

3.6 APPROACH TO PROJECT

Unit 4

Introduction to the project. Concepts. Regulations applicable in the writing of projects.

4.1 Definition of engineering project.

4.2 CONDITIONS THAT A PROJECT MUST COMPLY PROJECT.

4.3 CHARACTERISTIC OF THE ENGINEERING PROJECTS.

4.4 DECISIVE FACTORS OF THE PROJECT.

4.5 CLASSIFICATION OF THE ENGINEERING PROJECTS.

4.5.1.- Classification according to the purpose of the project.

4.5.2.- Classification according to the objectives and application fields.

4.5.3.- Main types of industrial projects.

4.5.3.1.- Major investment projects.

4.5.3.2.- Facilities and industrial plants.

4.5.3.3.- Lines and production processes.

4.5.3.4.- Machines, equipment and their elements. Prototypes.

4.5.3.5.- For the purpose of the project.

4.5.3.6.- For investment volume.

4.5.3.7.- For process used.

4.6 AGENTS IN THE ENVIRONMENT OF THE PROJECT.

4.7 DESCRIPTION OF THE STAGES AND PHASES OF A PROJECT. CLASSICAL THEORY.

4.7.1.- Approach.

4.7.3.- Quantification.

4.7.4.- Check.

4.7.5.- The basic project.

4.7.6.- Calculation and adjustment.

4.7.7.- Project documentation.

4.7.8.- Legislation.

4.7.9.- Implementation and control.

Unit 5

Organization and project documentation.

5.1 THE PROJECT AS A SYSTEM. GENERAL THEORY PROJECT.

5.1.2.- Previous studies.

5.1.3.- Basic engineering.

5.1.3.1.- Revision of previous studies.

5.1.3.2.- Definition project.

5.1.3.3.- Data base:

5.1.3.4.- Permits and authorizations.

5.1.3.5.- Process engineering.

5.1.3.6.- Transfer technology.

5.1.4.- Activities of Basic Engineering Project.

5.1.4.1.- Production means.

5.1.4.2.- General information.

5.1.4.3.- Information that affects the specialists in infrastructure.

5.1.4.4.- Information that affects the specialists in construction.

5.1.4.5.- Information that affects the specialists in foundations and structures.

5.1.4.6.- Information that affects the mechanical specialists. General and auxiliary facilities.

5.1.4.7.- Information of specialists electricity.

5.1.4.8.- Information of specialists pipes.

5.1.4.9.- Information of specialists instrumentation.

5.1.5.- Development Engineering of the project..

5.1.5.1.- Detail Engineering.

5.1.5.2.- Purchasing management.

5.1.5.3.- Contract management..

5.1.5.4.- Construction and Assembly.

5.1.5.5.- Supervision of Construction and Assembly.

Unit 6

Basic engineering of the project. Analysis of the main documents.

6.1 PROJECT DOCUMENTS. GENERALITIES.

6.2 DESCRIPTION OF EACH DOCUMENT.

6.2.1.- Plans.

6.2.2.- Annexes Project.

6.2.3.- Terms of reference.

6.2.4.- State measurements.

6.2.5.- Budget.

6.2.6.- Memory.

6.2.7.- Studies with own entity.

Unit 7

Execution of projects and works. Project management. Regulatory aspects. Legal responsibilities.

7.1 PROJECT EXECUTION.

7.1.1.- Material execution of the project (construction).

7.1.2.- Parties involved.

7.2 DIFFERENT ALTERNATIVES FOR PROJECT EXECUTION.

7.2.1.- Traditional alternatives.

7.3 START UP OF TECHNICAL MANAGEMENT.

7.3.1.- Objective.

7.3.2.- Beginning.

7.3.3.- End.

7.3.4.- Duration.

7.3.5.- Planning start up.

7.3.5.1.- Definition.

7.3.5.2.- Programming.

7.3.6.- Organization of start up.

7.3.6.1.- Definition and objectives.

7.3.6.2.- Supervision plan and surveillance.

7.3.6.2.- Pursuit plan deadlines.

7.3.7.- Health and Safety Plan.

7.3.8.- Cost Control Plan.

7.3.8.1.- Objectives.

7.3.9- Execution.

7.3.9.1.- Act of reconsideration.

7.3.9.2.- Tasks.

7.3.10.- Certifications.

7.3.11.- Contract modifications.

7.3.12.- Suspensions and extensions.

7.3.13.- Provisional reception and delivery to user.

7.3.14.- Provisional liquidation.

7.3.15.- Final reception and final liquidation.

7.4 EXTRACT FROM THE TECHNICAL BUILDING CODE (CTE).

Methodology

La asignatura tiene un componente **conceptual** y otro **práctico**.

Parte conceptual:

Comprende todo lo que hace referencia a los conceptos generales relacionados con la asignatura.

Esta parte es valorará individualmente por cada alumno.

Parte Práctica:

Para el desarrollo práctico de la asignatura, los alumnos se organizarán en *equipos de máximo 4/6 estudiantes* para realizar el proyecto y las prácticas, (de éstas, algunas pueden ser individuales, según criterio del profesor). Los criterios para formar el equipo pueden ser: Afinidad entre alumnos, posibilidad de compartir horarios comunes, otros.

Las prácticas se realizarán siguiendo los criterios fijados en clase y se entregarán o expondrán en las fechas que fije el profesor. Al finalizar el cuatrimestre, cada equipo entregará el proyecto al profesor, con sus documentos y lo expondrá oralmente en clase ante el resto de alumnos de la asignatura.

Durante la parte de elaboración y redacción del proyecto, el profesor realizará un seguimiento mediante tutorías técnicas. Estas tutorías sólo podrán ser en el horario que a tal efecto tenga destinado el profesor o durante las horas de clase que se indique. El equipo expondrá el ritmo de trabajo que lleva a cabo, el cual quedará reflejado en la carpeta individual del alumno y en la de equipo.

El profesor- tutor de equipo aportará su punto de vista en aspectos como:

Establecer juicio sobre la marcha del trabajo.

¿Cuál es el alcance del proyecto.

Motivar a los alumnos ante dificultad que pueden aparecer.

Como presentar de la forma más efectiva su trabajo en público.

Cada equipo designará un director - coordinador del proyecto. El equipo se reunirá según las propias necesidad. De esta reunión se hará un acta en la que constará como mínimo, la fecha, los asistentes, puntos propuestos, soluciones en cada punto y tareas a realizar temporalizada para cada componente del equipo. Esta acta se entregará en soporte informático al profesor antes de las sesiones de tutoría técnica.

El tema del proyecto lo propondrá cada equipo o / y el profesor, procurando que sea lo más real posible.

El Proyecto se entregará en soporte normalizado de papel e informático (el utilizado por el alumno para la redacción del documento). El soporte papel se volverá al equipo el día de la exposición del trabajo, la parte de soporte informático quedará en posesión del profesor.

Development plan

Developing the contents sequentially.

Evaluation

The grade of each part (theory and practice) is the weighted average of: exam, practices and attendance. To make average each part will have a grade equal to or greater than 3.5.

It provides a continuous evaluation of the student.

Team practices are mandatory.

The grade for the subject will be valued in the following way:

Concepts (exams), 40%.

Practical work, 15%.

The final project that will be presented at the end of the semester, 35%.

Class attendance, 10%

Theoretical. Release regarding the partial test.

In the middle of the semester there will be a partial test (P1) which corresponds to the subject taught during the first part of the semester.

At the end of the semester there will be a partial test (P2), which corresponds to the subject taught during the second half of the semester. Students who have suspended the test P1 will do exam PT that correspond to all the matter of the semester. The student can only examine of part P2 or exam PT.

Both sides have the same value. The practices (individual and project) are obligatory for all students.

Second round (extraordinary):

The matter will be evaluated in this round will be corresponded to all subject (including practices).

Observations:

The exam consists of part type test and / or theoretical questions that correspond to 50% of the theory exam.

The other theory part consist of exercises with notes, bibliography or guides, this part represent 50% of the theory exam.

In all parts have to obtain at least 3.5 for can do average.

Practical

This part will consist of:

- The realization of a project proposed by the professor and / or each class team.

The presentation of the project and practices and evaluation them is indispensable condition to pass the subject.

Each team member will value (in %) the rest of teammates (individually) at the final course.

This valuation will be referred to compliance with the agreement by the team work, participation, motivation in the tasks done, attitude in meetings, etc. This valuation will be communicated by email to professor individually (to extrapolate the extreme values).

The valuation of this part is the following:

	VALUATION %
TECHNICAL TUTORIAL	10
PROJECT	70
PRESENTATION AND EXPOSITION PROJECT	20

Bibliography

- Manuel de Cos Castillo. Teoría General del Proyecto. Volumen I (ISBN: 84-7738-332-4). I Volumen II (ISBN: 84-7738-452-5). Ed. Síntesis.
- David Burstein y otro. Project Management.(ISBN: 84-252-1701-6). Ed. Gustavo Gili.
- Faustino Merchan Gabaldon. Instrucciones para la dirección integrada de proyectos de obras. (ISBN: 84-95312-01-8).Ed. Dossat 2000.
- James P.Lewis. Fundamentos de la dirección de proyectos.Ediciones S.
- Current legislation applicable to buildings and industrial facilities.
- Different regulations affecting the work going on.
- Different websites of Government.

