

SUBJECT TEACHING GUIDE

G741 - Projects and the Environment

Degree in Mechanical Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Mechanical Engineering			Type and Year	Compulsory. Year 4
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Projects and the Environment Module in Common with the Industrial Branch				
Course unit title and code	G741 - Projects and the Environment				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS				
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Other lecturers	BERNARDO ARGOS BARRIOCANAL				

3.1 LEARNING OUTCOMES
- Identify the industrial project and the different disciplines involved in its realization.
- Know the different types of industrial projects about equipment and mechanical installations and the specific methodologies for its realization.
- Identify and know the economic, environmental and safety aspects that concern projects about equipment and mechanical installations.
- Interpret and know how to proceed with the legal processing of projects.

4. OBJECTIVES	
1	Know the life cycle of industrial projects and the involved stakeholders.
2	Identify the organizational structure of a company in relation with the realization of projects.
3	Learn and apply a methodology to elaborate a project in various phases of engineering and specifically to elaborate projects in mechanical engineering.
4	Know and identify the economic and environmental sustainability criteria in the design of projects.

6. SUBJECT PROGRAM	
CONTENTS	
1	Introduction. Concept and types of industrial projects. Project's life cycle. Agents involved, organization and functions.
2	Structure of an industrial project and methodology to elaborate mechanical industrial projects. General description of phases and stages of an industrial project. Planning, programming and execution of industrial projects. Types of industrial mechanical projects. Methodology to elaborate mechanical projects.
3	Legal and environmental processing of projects. Legal processing and professional endorsement. Environmental processing of projects.
4	Environmental sustainability in the design of equipment and mechanical facilities. Legal and normative framework. Concurrent engineering. Environmental sustainability aspects. Sustainable design strategies. Techniques of sustainability assessment. Environmental impact of industrial projects.
5	Methods and tools for life cycle analysis. Case study analysis.
6	Safety in the design of equipment and mechanical facilities. Legal and normative framework. Safety aspects in the design of equipment and mechanical facilities. Design strategies for the safety. Techniques of safety assessment.
7	Project writing. Norms UNE-ISO 157000. Basic documents: memory, annexes, plans, construction conditions, measurements, and budget. Safety and health study, environmental impact study.
8	Economic assessment of industrial projects. Economic feasibility aspects of projects. Techniques for the investment estimation. Techniques for the operation costs estimation. Techniques for the economic profitability assessment.
9	Methods and tools for the elaboration of specific documents of the project. Case study analysis.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Written exam 1. Evaluation of issues 1, 2 and 3.	Written exam	No	Yes	30,00
Written exam 2. Evaluation of issues 4, 6 and 8.	Written exam	No	Yes	40,00
Practical exercise. Evaluation of issue 5.	Laboratory evaluation	No	No	10,00
Work. Evaluation of issues 7 and 9.	Work	No	No	20,00
TOTAL				100,00
Observations				
<p>- To pass the subject, the addition of the weighted average score of each assessment activity must take a score equal or greater than 5 out of 10.</p> <p>- If the subject is not passed on the ordinary evaluation, the qualifications of the recoverable assessment activities which score is equal or greater than 5 out to 10 will be saved for the extraordinary evaluation, and the complete qualification of the no-recoverable assessment activities.</p>				
Observations for part-time students				
<p>- Remember that the part-time students can be tested of the complete theme of the course by a written exam on the official calls.</p>				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Diseño de plantas industriales. Morales S. (2018). Ed. UNED.
- Design science. Introduction to the needs, scope and organization of engineering design knowledge. Hubka V., Eder E. (1996). Ed. Springer-Verlag.
- Actividad profesional del ingeniero. Legislación y tramitación de proyectos. Calabuig C., Ferrer P., Vivancos J.L., Lozano, J.F., Viñoles R., Gómez-Senent E. (2015). Ed. Universidad Politécnica de Valencia.
- Sustainability in engineering design: an undergraduate text. Johnson A., Gibson A. (2014). Ed. Academic Press.
- Engineering for sustainability: A practical guide for sustainable design. Jonker G., Harmsen J. (2012). Ed. Elsevier.
- Oficina técnica y proyectos. Sebastián M.A., Arenas J.M., Claver J. (2017). Ed. UNED.
- AENOR. Norma UNE 157001:2014. Criterios generales para la elaboración formal de los documentos que constituyen un proyecto técnico.
- De Cos, M., 1995; Teoría General del Proyecto. Ingeniería de Proyectos/Project Engineering. Síntesis, Madrid.
- Martínez de Pisón Ascacibar, F., 2002; La oficina técnica y los proyectos industriales. Zaragoza: Copy Center.
- Cañizal, F. y Pérez, M.A., 1993; La Redacción del Proyecto. Aspectos Previos y Metodología. Serv. Publ. Universidad de Cantabria.
- Bond, WTF., 1996; Design Project Planning. Prentice Hall, Hempstead.
- Hubka, V. y Eder, E., 1996; Design Science. Introduction to the Needs, Scope and Organization of Engineering Design Knowledge. 2Rev., Springer-Verlag, Berlín.