

**Course Syllabus (Proyecto/Guía docente de la asignatura)**

<b>Subject</b>	TECHNICAL PROJECTS DEVELOPMENT AND MANUFACTURING ENGINEERING		
<b>Degree</b>	Industrial Engineering International Semester		
<b>Plan</b>	900	<b>Code</b>	75004
<b>Semester</b>	Spring	<b>Type</b>	Elective
<b>ECTS</b>	6		
<b>Language</b>	English		
<b>Teaching staff</b>	Elena Merino Gómez		
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<b>Date of review by the External Relations Committee</b>	13 July 2023		



## 1. Sense of the Course

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### 1.1 Contextualization

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The main aim of this subject is the introduction of students in the field of the technical projects development about the design and manufacturing of a product, which offers innovation as new solution or improvement of an existing product.

### 1.2 Relationship with other subjects

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This subject is related to subjects or courses about designing, market studies, materials, manufacturing and product developing.

### 1.3 Recommended Prior Knowledge

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No requirements.





## 2. Competences

### 2.1 Generic competences

GC2 Capability: organization and planning of work and time.

GC 3 Capability: oral presentation.

GC 4 Capability: rigorous writing.

GC 6 Capability: problems solution.

GC 7 Capability: critical reasonability/logical analysis.

GC 8 Capability: applying knowledge to practical work.

GC 10 Capability: design and developing of Projects.

GC 11 Capability: creativity and innovation.

GC 13 Capability: doing ethically and with social compromise.

GC 15 Capability: managing with technical requirements and writing technical documents.

### 2.2 Specific competences

SC15 Basic knowledge: of production and manufacturing systems.

SC17 Knowledge: applied to companies' organization.

SC18 Knowledge and capabilities: to organize and manage projects. To know the organization structure and functions in a project's office.



### 3. Course goals

- Elaborate a project for the presentation of a new product or improvement of an existing one, which meets some social requirements.

For this, the students must:

- Investigate about the field and market where the new product or improvement is going to arrive at.
- Look for the needs and problems that exist nowadays in our society.
- State of art of technology about the field, problem and solution that they want to develop at all.
- Propose an innovative solution specified as a product or part of a product.
- Present the scheme, functionalities, characteristics, materials, design, manufacturing processes, costs, security and commercialization of the product.





#### 4. Learning Units

There is only one principal theme that is followed during the semester, about a technical project.

Workload in credits ECTS:

##### a. Course goals

All the engineering and science profiles must know and manage perfectly in technical projects field. This is the main reason that guides this course. The main objective for students is to achieve the goals about a technical project for designing and developing a new product or improvement for a specific market.

- Relevant sources researching
- Technical documents understanding
- Design a new product or improvement, functionalities, materials, manufacturing and commerce strategies
- Technical documents writing
- Results presentation and discussion

##### b. Contents

All the contents are related to technical projects development and European directives.

##### c. Bibliography

- Product design for manufacture and assembly. G. Boothroyd, P. Dewhurst, W. A. Knight. Ed. CRC Press. 2010.
- The plastics Handbook. C. Lefteri. Ed. RotoVision. 2007.
- AppelDesign: The work of the Apple Industrial Design Group. P. Kunkel. Ed. Watson-Guptill Publications. 1997.
- Product Concept Design: A Review of the Conceptual Design of Products in Industry. T. K. Keinonen, R. Takala. Ed. Springer. 2010.

##### d. Timing

ECTS CREDITS	EXPECTED DEVELOPMENT PERIOD
6	The whole semester (the work is planned weekly).

## 5. Teaching and Learning Methods

Teaching and Learning Methods:

- Master class
- Discussion of ideas in pairs, large number of students group (debate)
- Individual and group work
- Presentation of results and defense

Resources applied:

- Usual class with typical board.
- Computers laboratory with Digital board for teacher workplace.

## 6. Dedication of the student to the subject

PRESENIAL ACTIVITIES	HOURS	NON PRESENIAL ACTIVITIES	HOURS
Theoretical classes	30	Researching activities	12
Practical classes	30	Documents analysis	12
Final Project presentation	10	Design and developing process	24
		Technical documents writing	24
		Presentation work	8
<b>Total in-person classes</b>	<b>70</b>	<b>Total non in-person classes</b>	<b>80</b>

## 7. Activities evaluated and grading system

The final work consists in the presentation of the results of a technical Project about a new product or improved product to offer a solution to some society needs.

EVALUATION PROCEDURES	WEIGHT OVER FINAL MARK	EXPLANATION
Final work document	70%	Along the course there are several activities presented and feedback received
Final work presentation	20%	Along the course there are several activities presented and feedback received
Final work presentations evaluation	10%	



## 8. Additional Considerations

In this course, student will already be considered nearly as an engineer or scientist. This is because they have to work by their own, as if they were working in a small company department, taking their own decisions, developing their products or improving products that the company manufactures now.

This point of view is interesting for students, as they want to feel how they are going to manage when they arrive at a company or researching institute in their first job as engineers or scientists.

That is why scientist profiles are welcome too, since it is advisable that they are able to achieve the scientific challenges as well as the engineering profiles. This course is useful to improve their profile as future scientists.

The capabilities and skills that the students are going to develop and increase in this subject, are related with their maturity, intelligence, problems solving, discussion, and presenting results to put the solution in the specific market that corresponds.

