Proyecto/Guía docente de la asignatura Adaptada a la Nueva Normalidad (COURSE SYLLABUS)

Asignatura (Subject)	TECHNICAL PROJECTS DEVELOPMENT AND MANUFACTURING ENGINEERING		
Titulación (Program/Degree)	INDUSTRIAL ENGINEERING - INTERNATIONAL SEMESTER		
Plan (Plan)	900	**Código (Code)**	75004
Periodo de impartición (Semester)	Second semester	**Tipo/Carácter (Type)**	Optional
Créditos ECTS (ECTS credits)	6		
Lengua en que se imparte (Language)	English		
Profesor/es responsable/s (Teacher)	*María Isabel Jiménez Gómez*		
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Departamento (Department)	CMeIM EGI ICGF IM IPF		

1. Situación / Sentido de la Asignatura (Sense of the Course)

1.1 Contextualización (Contextualization)

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 Relación con otras materias (Relationship with other subjects)

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

1.3 Prerrequisitos (Recommended Prior Knowledge)

No requirements.

2. Competencias (Competences)

2.1 Generales (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 Específicas (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 projects office.

3. Objetivos (Course goals)

- Elaborate a Project for the presentation of a new product or improvement of an existing one, which responses to a need or problem that society has.

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.
- CE mark for the product, if the new or improved product requires it, based on European directives for being commercialized in the EU Market.

4. Contenidos y/o bloques temáticos (Learning Units)

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

Carga de trabajo en créditos ECTS (Workload in credits ECTS): 6

a. Contextualización y justificación (Contextualization and Justification)

During this course, the students must develop a complete technical project. This is the reason why all the themes are include together in one unique theme that present and link all the relevant points of the project.

b. Objetivos de aprendizaje (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

c. Contenidos (Contents)

All the contents are related to technical projects design and development, applying the European directives related to the specific project in each case.

d. Métodos docentes (Pedagogical Methodology)

The main teaching-learning methodologies that are used are:

- Master class and debate class. Both types of class are relevant for students. First type is good to acquire knowledge, whereas second one allows discussing different points of view about the problems to solve with a project, as how the project can offer the best solution.
- Flipped classroom for practical classes. It means that the students must work by their own (learning by doing) in their project. While they explain and discuss their results in the laboratory classes.

e. Plan de trabajo (Work Planning)

The planning of this course is weekly, because every week the students must be in front of a new point, theoretical and practical, to response to.

f. Evaluación (Evaluation)

The evaluation of this course is mostly based on the real and innovative project that the students develop along the course. They must present a technical document, but also they have to present their solution to defend it and to answer all the technical and customer questions that the teacher and classmates ask for.

g Material docente (Learning Material)

g.1 Bibliografía básica (Basic 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.

g.2 Bibliografía complementaria (Complementary Bibliography)

The complementary bibliography depends on the specific project that each student does.

g.3 Otros recursos telemáticos (Other online resources)

The students must work with relevant papers from journals and conference proceedings related to the topic of the Project they are developing. They use the University of Valladolid website to connect with the platforms that our University offers to the whole community.

h. Recursos necesarios (Resources)

The classroom for theoretical classes and the laboratory (with computers) for practical classes are the resources that are needed for this course.

i. Temporalización (Timing)

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

5. Métodos docentes y principios metodológicos (Teaching and Learning Methods)

Teaching and Learning Methods:

- Master class (teacher)
- 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. Tabla de dedicación del estudiante a la asignatura (Dedication of the student to the subject)

ACTIVIDADES PRESENCIALES o PRESENCIALES A DISTANCIA(1) PRESENTIAL ACTIVITIES	HORAS HOURS	ACTIVIDADES NO PRESENCIALES NON PRESENTIAL ACTIVITIES	HORAS 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
Total in-person classes	70	Total not in-person activities	80
		TOTAL (in-person & not in-person activities)	150

(1) Actividad presencial a distancia es cuando un grupo sigue una videoconferencia de forma síncrona a la clase impartida por el profesor para otro grupo presente en el aula.

7. Sistema y características de la evaluación (Activities to be 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.

INSTRUMENTO/PROCEDIMIENTO EVALUATION PROCEDURES	PESO EN LA NOTA FINAL WEIGHT OVER FINAL MARK	OBSERVACIONES EXPLANATION
Final work document*	70%	*along the course there are several activities presented and evaluated
Final work presentation	30%	

CRITERIOS DE CALIFICACIÓN (Evaluation criteria)

• **Convocatoria ordinaria (Regular Call):**
  ○ The project document must be written based on a specific structure and index given by the teacher. The number and type of references must be relevant in the scientific or technical field that the project belongs.
  ○ The presentation of this project must be focus on the final customer or the company what would be interested in the solution that the project offers.

- **Convocatoria extraordinaria (Exceptional Call):**
  - The project document must be written based on a specific structure and index given by the teacher. The number and type of references must be relevant in the scientific or technical field that the project belongs.
  - The presentation of this project must be focus on the final customer or the company what would be interested in the solution that the project offers.

8. Consideraciones finales (Additional Considerations)

In this course, the student is going to be considered nearly as an engineer or scientist, although he or she is not yet. This is because they have to work by their own, like 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, because as the teacher of this course, I have been able to observe that they achieve the challenges as well as the engineering profiles, and they feel that this course is quite 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, work group, problems solving, discussion, and presenting results to put the solution in the specific market that corresponds.

Adenda a la Guía Docente de la asignatura (COURSE SYLLABUS ADDENDUM)

In case of complete online mode for this Course, considering online as the 100% of teaching, the applied Course Syllabus Addendum will maintain the following points:

- The timetable of classes every week will be the same as in-person class mode.
- The time dedicated for tutoring by the teacher is similar as in-person class mode.
- The contact to the teacher will be by email.
- The teacher will answer every student in 2 or 3 working days maximum (by email).
- The type of teaching (in-person or online) does not affect to the contents of this Course (part 4 of this document) nor the Evaluation system (part 7). So they maintain as in Course Syllabus.
- This addendum (part of this Course Syllabus) only includes the changes between in-person teaching and online teaching. And these differences are:

    - Pedagogical methodology mode (part 5 of this document).
    - The dedication of the students mode (part 6 of this document)
    - Only some characteristics of evaluation mode (part 7 of this document).

A5. Métodos docentes y principios metodológicos (Teaching and Learning Methods)

The Teaching and Learning Methods are similar to those described before in this Course Syllabus. However, none of these methods will be applied in-person mode (face to face), so they will be applied online mode, as I present them:

- Master class (teacher): using videoconference software tool.
- Discussion of ideas in pairs, large number of students group (debate): using simulation-class software tool.
- Presentation of results and defense in online mode, with videoconference software tool.

Resources applied, online, in case of in-person resources:

- Usual face-to-face class: with online videoconference software tool.
- Computers laboratory: using simulation-class software tool and the students will work at home with their own computer.

A6. Tabla de dedicación del estudiante a la asignatura (Dedication of the student to the subject)

ACTIVIDADES PRESENCIALES o PRESENCIALES A DISTANCIA[1] REAL-TIME ONLINE ACTIVITIES[2]	HORAS HOURS	ACTIVIDADES NO PRESENCIALES NON PRESENTIAL ACTIVITIES	HORAS 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
Total real-time online classes	70	Total not in-person activities	80
TOTAL (real-time online & not in-person activities)			150

(1) Actividad presencial a distancia es cuando un grupo sigue una videoconferencia de forma síncrona a la clase impartida por el profesor para otro grupo presente en el aula.
(2) *Complete online activity realized in real-time the teacher and all the students of the class.*

A7. Sistema y características de la evaluación (Activities to be evaluated and grading system)

In case of application of this Course Syllabus Addendum, the evaluation form is the same as the Course Syllabus explains. The unique difference is the following point: the students must present their project through real-time online platform. This mode allows the teacher and all the classmates to listen and to ask questions, as in face-to-face presentation. Therefore, the evaluation system is the same as Course Syllabus; the unique difference is the place where the presentation of the projects occur (classroom in Course Syllabus, online site in this Addendum).