

## PROGRAMA DE LA ASIGNATURA

Curso académico: 2021-2022

| Identificación y características de la asignatura |  |                        |                            |
|---|--|------------------------|----------------------------|
| Código  | 401512   | Créditos ECTS          | 6                          |
| Denominación (español)                            | FORMULACIÓN, GESTIÓN Y EVALUACIÓN DE PROYECTOS I+D+i     |                        |                            |
| Denominación (inglés)                             | FORMULATION, MANAGEMENT AND EVALUATION OF R&D&i PROJECTS |                        |                            |
| Titulaciones                                      | Máster Universitario en Ingeniería Industrial            |                        |                            |
| Centro  | Escuela de Ingenierías Industriales                      |                        |                            |
| Semestre  | 3º   | Carácter               | Optativa                   |
| Módulo  | OPTATIVIDAD  |                        |                            |
| Materia   | GESTIÓN INTEGRAL DE PROYECTOS DE INNOVACIÓN              |                        |                            |
| Profesor/es                                       |  |                        |                            |
| Nombre  | Despacho   | Correo-e               | Página web                 |
| Justo García Sanz-Calcedo                         | B.2.3  | jgsanz@unex.es         |                            |
| Área de conocimiento                              | Proyectos de Ingeniería                                  |                        |                            |
| Departamento                                      | Expresión Gráfica  |                        |                            |
| Profesor coordinador (si hay más de uno)          | Justo García Sanz-Calcedo                                |                        |                            |
| Competencias                                      |  |                        |                            |
|   | Competencias Básicas                                     | Competencias Generales | Competencias Transversales |
|   | Marcar con una "X"                                       | Marcar con una "X"     | Marcar con una "X"         |
|   | CEC1   | CEG1                   | CEI1                       |
|   | CEC2   | CEG2                   | CEI2                       |
|   | CEC3   | CEG3                   | CEI3                       |
|   | CEC4   | CEG4                   | CEI4                       |
|   | CEC5   | CEG5                   | CEI5                       |
|   | CEC6   | CEG6                   | CEI6                       |
|   | CEC7   | CEG7                   | CEI7                       |
|   | CEC8   | CEG8                   |                            |
|   | CEC9   |                        |                            |
|   | CEC10  |                        |                            |
|   | CEC11  |                        |                            |
|   | CEC12  |                        |                            |
|   | CEC13  |                        |                            |
|   | CEFM1  |                        |                            |
|   | ET1  | EG1                    | EI1                        |
|   | ET2  | EG2                    | EI2                        |
|   | ET3  | EG3                    | EI3                        |
|   | ET4  | EG4                    | EI4                        |
|   | ET5  | EG5                    | EI5                        |
|   | ET6  | EG6                    | EI6                        |
|   | ET7  | EG7                    | EI7                        |
|   | ET8  | EG8                    |                            |
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CEC: Competencias específicas complementarias  
 CET: Competencias específicas de tecnologías industriales  
 CEG: Competencias específicas de gestión  
 CEI: Competencias específicas de instalaciones, plantas y construcciones complementarias  
 CEFM: Competencias específicas de fin de máster

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| Observaciones                  |   | Página  | 1/8                 |
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| Competencias EM1 | Marcar con una "X" | Competencias EM2 | Marcar con una "X" | Competencias EM3 | Marcar con una "X" | Competencias EM4 | Marcar con una "X" | Competencias EM5 | Marcar con una "X" | Competencias EM6 | Marcar con una "X" |
|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|
| CEM1.1           |                    | CEM2.1           |                    | CEM3.1           |                    | CEM4.1           |                    | CEM5.1           |                    | CEM6.1           |                    |
| CEM1.2           |                    | CEM2.2           |                    | CEM3.2           |                    | CEM4.2           |                    | CEM5.2           |                    | CEM6.2           |                    |
| CEM1.3           |                    | CEM2.3           |                    | CEM3.3           |                    | CEM4.3           |                    | CEM5.3           |                    | CEM6.3           |                    |
| CEM1.4           |                    | CEM2.4           |                    | CEM3.4           |                    | CEM4.4           |                    | CEM5.4           |                    | CEM6.4           |                    |
| CEM1.5           |                    | CEM2.5           |                    | CEM3.5           |                    | CEM4.5           |                    | CEM5.5           |                    | CEM6.5           | X                  |
|                  |                    | CEM2.6           |                    | CEM3.6           |                    |                  |                    | CEM5.6           |                    | CEM6.6           | X                  |
|                  |                    |                  |                    |                  |                    |                  |                    | CEM5.7           |                    |                  |                    |
|                  |                    |                  |                    |                  |                    |                  |                    | CEM5.8           |                    |                  |                    |

CEM1: Competencias de especialidad: tecnologías de producción  
 CEM2: Competencias de especialidad: organización industrial  
 CEM3: Competencias de especialidad: energías renovables y eficiencia energética  
 CEM4: Competencias de especialidad: redes eléctricas inteligentes  
 CEM5: Competencias de especialidad: mecatrónica  
 CEM6: Competencias de especialidad: gestión integral de proyectos de innovación

## Topics and contents

### Brief

Technology and Innovation in enterprises. Support tools for innovation (creativity, surveillance, etc.). Technology competencies. New technologies applied to project management.

### Contents

Topic 1: Novelty and innovation in R&D&i projects. Support tools.

Contents of topic 1:

- 1.1 Conceptual framework
- 1.2 R&D&i life cycle
- 1.3 Legal framework within a R&D&i project
- 1.4 R&D&i projects typology.
- 1.5 Tools of R&D&i projects
- 1.6 Technological surveillance
- 1.7 Business intelligence
- 1.8 Business counterintelligence

Description of practical activities: Developing an R&D&i project.

Topic 2: Morphology of R&D&i Projects

Contents of topic 2:

- 2.1 R&D&i project morphology
- 2.2 R&D&i project structure
- 2.3 Basic contents within an R&D&i project
- 2.4 Exploitation of results within an R&D&i project

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- 2.5 Product project
- 2.6 Morphology of a product project
- 2.7 Project report and Tender Specifications
- 2.8 Planes and graphic documents
- 2.9 Project presentations
- 2.10 Ergonomics of the product
- 2.11 Production volume studies
- 2.12 Linear programming techniques
- 2.13 Studies of improving and product optimization. Value Analysis
- 2.14 Drafting rules

Description of practical activities: Developing an R&D&i project.

### Topic 3: R&D&i Project Assessment

Contents of topic 3:

- 3.1 R&D&i project assessment
- 3.2 Contents of an Assessment Report
- 3.3 Research Project
- 3.4 Technology Development Project
- 3.5 Technological Innovation Project

Description of practical activities: Developing an R&D&i project.

### Topic 4: Technology Trading: Industrial Protection and Intellectual Property.

Contents of topic 4:

- 4.1 Ways of protecting new creations
- 4.2 Industrial property
- 4.3 Intellectual property
- 4.4 Patents and Utility Models
- 4.5 Industrial Design
- 4.6 OEPM Procedures
- 4.7 Exploitation licenses
- 4.8 Transfer of Technology
- 4.9 UNE 166008:2012. Transfer of Technology

Description of practical activities: Developing an R&D&i project.

### Topic 5: Project Procurement Management

Contents of topic 5:

- 5.1 Procurement Management Plan
- 5.2 Procurement Forecast
- 5.3 Procurement Execution
- 5.4 Types of Contracts

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- 5.5 Negotiation techniques
- 5.6 Procurement management
- 5.7 Private hiring management
- 5.8 Public hiring management
- 5.9 Procurement Closure
- 5.10 Negotiation skills

Description of practical activities: Developing an R&D&i project.

Topic 6: Agile Projects

Contents of topic 6:

- 6.1. Introduction to Agile Projects
- 6.2. Scrum
- 6.3. Kanban

Description of practical activities: Developing an R&D&i project. Practical session with a reputed guest professor linked to Project Management.

Topic 7: Project Quality Management

Contents of topic 7:

- 7.1 Definitions
- 7.2 Quality Assurance
- 7.3 Tools to assess Quality

Description of practical activities: Developing an R&D&i project. Practical session with a reputed guest professor linked to Project Management.

Topic 8: Project Risk Assessment I

Contents of topic 8:

- 8.1 Objectives of Risk Management
- 8.2 Forecast and Risk Management
- 8.3 Tools to identify and assess risks

Description of practical activities: Developing an R&D&i project

Topic 9: Project Risk Assessment II

Contents of topic 9:

- 9.1 Tools to identify and assess risks
- 9.2 Computer-based tools

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Description of practical activities: Developing an R&D&i project

Topic 10: Project Stakeholders Management

Contents of topic 10:

- 10.1 Stakeholders
- 10.2 Stakeholders positions
- 10.3 Interests and expectations of stakeholders
- 10.4 Starting up a Stakeholders Plan

Description of practical activities: Developing an R&D&i project.

### Actividades formativas

| Horas de trabajo del alumno por tema |       | Horas teóricas | Actividades prácticas |     |     |     | Actividad de seguimiento | No presencial |
|--------------------------------------|-------|----------------|-----------------------|-----|-----|-----|--------------------------|---------------|
| Tema                                 | Total | GG             | PCH                   | LAB | ORD | SEM | TP                       | EP            |
| 1                                    | 8     | 2              |                       |     |     | 2   |                          | 4             |
| 2                                    | 12    | 2              |                       |     |     | 2   |                          | 8             |
| 3                                    | 14    | 3              |                       |     |     | 3   |                          | 8             |
| 4                                    | 16    | 3              |                       |     |     | 4   |                          | 9             |
| 5                                    | 15    | 3              |                       |     |     | 4   |                          | 8             |
| 6                                    | 11    | 2              |                       |     |     | 2   |                          | 7             |
| 7                                    | 9     | 2              |                       |     |     | 2   |                          | 5             |
| 8                                    | 9     | 2              |                       |     |     | 2   |                          | 5             |
| 9                                    | 18    | 3              |                       |     |     | 4   |                          | 11            |
| 10                                   | 19    | 4              |                       |     |     | 5   |                          | 10            |
| <b>Evaluación</b>                    | 19    | 4              |                       |     |     |     |                          | 15            |
| <b>TOTAL</b>                         | 150   | 30             |                       |     |     | 30  |                          | 90            |

GG: Grupo Grande (100 estudiantes).

PCH: prácticas clínicas hospitalarias (7 estudiantes)

LAB: prácticas laboratorio o campo (15 estudiantes)

ORD: prácticas sala ordenador o laboratorio de idiomas (30 estudiantes)

SEM: clases problemas o seminarios o casos prácticos (40 estudiantes).

TP: Tutorías Programadas (seguimiento docente, tipo tutorías ECTS).

EP: Estudio personal, trabajos individuales o en grupo, y lectura de bibliografía.

### Metodologías docentes

De entre las metodologías docentes incluidas en el plan de estudios del título, en la presente asignatura se utilizan las siguientes:

| Metodologías docentes   | Se indican con una "X" las utilizadas |
|---|---------------------------------------|
| 1. Clase magistral. Exposición de contenidos por parte del profesor.  | X                                     |
| 2. Sesiones de trabajo utilizando metodología del caso.   | X                                     |
| 3. Sesiones de trabajo en el aula para la resolución de ejercicios.   | X                                     |
| 4. Desarrollo de prácticas en espacios con equipamiento especializado (laboratorios, aulas de informática, trabajo de campo). | X                                     |

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|---|---|
| 5. Visitas técnicas a instalaciones.  |   |
| 6. Desarrollo, redacción y análisis, individualmente o en grupo, de trabajos, memorias, ejercicios, problemas, y estudios de caso, sobre contenidos y técnicas, teóricos y prácticos, relacionados con la materia.  | X |
| 7. Pruebas, exámenes, defensas de trabajos, prácticas, etc. Pudiendo ser orales o escritas e individuales o en grupo.   | X |
| 8. Estudio del alumno. Preparación y análisis individual de textos, casos, problemas, etc.  | X |
| 9. Formación en TICs y desarrollo de habilidades comunicativas (orales, escritas, multimedia).  | X |
| 10. Aprendizaje fuera del aula, basado en la vinculación entre formación académica y experiencias empresariales o profesionales.  | X |
| 11. Aprendizaje supervisado y tutelado por el profesor para, a través de la interacción individual entre alumno y tutor, detectar posibles problemas del proceso formativo, conocer los resultados del aprendizaje fuera del escenario del aula y programar los procesos de trabajo del alumno en actividades no presenciales como memorias, trabajo fin de master, preparación de la defensa del mismo, etc. | X |

### Learning Results

Acquisition of knowledge on Projects and Innovation.  
 Know and manage tools to support innovation.  
 Make use of creativity and develop activities such as brainstorming and morphological analysis.  
 Know and use technological forecast.  
 Acquisition of knowledge on technology trading.

### Evaluation processes

#### Evaluation criteria

Evaluation will be carried out regarding the following aspects:

CE1: Knowledge demonstration on the theoretical contents of the subjects. Related to competencies CB6, CB7, CB8, CB9, CB10, CEM6.5, CEM6.6

CE2: Knowledge on practical procedures related to the contents. Related to competencies CG1, CG2, CG3, CT1, CT2, CT3, CEM6.5, CEM6.6

CE3: Ability to apply acquired knowledge in the resolution of practical issues. Related to competencies CG8, CG9, CT4, CT6, CT7, CT11, CT12, CT13, CEM6.5, CEM6.6

CE4: Computer-based tools domain. Related to competencies CG5, CT5, CT10

CE5: Ability to communicate and put across knowledge by using appropriate oral

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and written language within the project field. Related to competencies CG4, CG6, CG7

CE6: Acquisition of skills related to a real-based project. Related to competencies CG2, CG6, CT8, CT9, CEM6.5, CEM6.6

### **Evaluation processes**

Among the evaluation activities that are included in the Syllabus, this subject weighs the following aspects (in %)

|  | <b>Established range in the verified memory</b> | <b>Ordinary Call</b> | <b>Extraordinary Call</b> | <b>Global Evaluation</b> |
|--|---|----------------------|---------------------------|--------------------------|
| 1. Exams (Final/Partial and Cumulative/Eliminatory Exams)  | 0%–100% <sup>(1)</sup><br>0%–80% <sup>(2)</sup> | 0                    | 0                         | 50                       |
| 2. Resolution and submission of activities (cases, problems, reports, projects, etc.) individually or in groups. | 0%–80%  | 70                   | 70                        | 50                       |
| 3. Attendance and exploitation of outcomes in classes, practical sessions, and on-site activities                | 0%–20%  | 20                   | 20                        | ---                      |
| 4. Presentation and defense of proposed work and reports   | 0% <sup>(1)</sup><br>0%–30% <sup>(2)</sup>      | 10                   | 10                        |                          |

<sup>(1)</sup>Subjects of *Tecnologías Complementarias*.

<sup>(2)</sup> Rest of subjects.

### **Description of evaluation activities**

To perform a continuous evaluation on the knowledge and competencies of the students, several tools will be used: R&D&i project realization (70% of the final mark, recuperable), defense of the project (10% of the final mark, recuperable), and attendance and participation in classes (20% of the final mark, non-recuperable).

Global evaluation will take place the same day as the final exam fixed by the Academic Planning Subdirectorate of the E.II.II. It will consist of an exam with both theoretical questions and practical activities without being able to consult notes or books. It is necessary to pass both parts independently.

## **Bibliografía y otros recursos**

### **Bibliografía básica**

CAPUZ, S.; GÓMEZ-SERNEET, E.; TORREALBA, A. et al. *Dirección, gestión y organización del proyecto*. Editorial UPV. 2011

DE COS CASTILLO, M. *Teoría General del Proyecto Tomos I y II* Ed. Síntesis. Madrid 2003

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MARCOS SERER; *Gestión Integrada de Proyectos*. Marcos Serer. Ediciones UPC. Barcelona. 2001.

PMBOK. *Fundamentos para la dirección de proyectos*. 6ª edición. PMI 2017

AEIPRO. ICB4 - Bases para la Competencia Individual en Dirección de Proyectos, Programas y Carteras de Proyectos

### **Bibliografía complementaria**

TORREALBA, Á.; GÓMEZ-SENENT, E.; CAPUZ, S.; GÓMEZ, T.; FERRER, P.; VIVANCOS, J.L. *Dirección, gestión y organización de proyectos*. ISBN: 9788477218975.

LOZANO, F.; ARAGONÉS, P.; GÓMEZ-SENENT, E.; CAPUZ, S.; GÓMEZ, T.; FERRER, P.; PERIS, J.; VIVANCOS, J.L.; GONZÁLEZ, M.C.; SÁNCHEZ, M.A. *El proyecto y su dirección y gestión*. ISBN: 9788477218364.

J.L. CANO, R. REBOLLAR, I. LIDÓN. *Manual de gestión de proyectos*. AEIPRO, 2009.

### **Páginas web**

Asociación Española de Ingeniería de Proyectos: [www.aepro.com](http://www.aepro.com)

Campus virtual de la Universidad de Extremadura <http://campusvirtual.unex.es>

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