



Universidad
Politécnica
de Cartagena



Centro
Universitario
de la Defensa

Course Unit Description:

Degree:

Grado en Ingeniería de Organización Industrial

1. Subject Information:

Name:	PROYECTOS DE INGENIERÍA DE ORGANIZACIÓN INDUSTRIAL (Project Engineering and Project Management)				
Course Field*	PROYECTOS DE INGENIERÍA DE ORGANIZACIÓN INDUSTRIAL				
Degree programme	MATERIAS COMUNES MÓDULO DE INGENIERÍA INDUSTRIAL				
Code:	511104001				
Degree	Grado en Ingeniería de Organización Industria				
Programme	2009 (Decreto 269/2009 de 31 de julio)				
Centre	Centro Universitario de la Defensa en la Academia General del Aire				
Type	Obligatoria				
Duration	Cuatrimestral	Cuatrimestre	1º	Curso	4º
Language	Español/ Inglés				
ECTS	4.5	Horas / ECTS	25	Carga total de trabajo (horas)	112.5

* Todos los términos marcados con un asterisco que aparecen en este documento están definidos en *Referencias para la actividad docente en la UPCT y Glosario de términos:*

<http://repositorio.bib.upct.es/dspace/bitstream/10317/3330/1/isbn8469531360.pdf>

2. Teaching Staff contact details

Lecturer	José Luis Roca González		
Departament	Ingeniería Y Técnicas Aplicadas		
Area of expertise	720 Proyectos de Ingeniería		
Office location	Despacho nº16 CUD		
Direct Phone	968189978	Fax	968189970
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URL / WEB	Aula virtual UPCT		
Office hours (for supervisions)	Martes y Jueves de 10:00 a 14:00 y de 19:00 a 20:00. Fuera de ese horario y como criterio general, el alumno que desee realizar una tutoría deberá realizar una cita previa por e-mail (con un día de antelación) para organizar debidamente la atención de todo el alumnado		
Office hours location (for supervisions)	Despacho nº16 CUD		

Degree	
Vinculación con CUD-UPCT	Centro Universitario de la Defensa
Año de ingreso en CUD-UPCT	2010
Nº de quinquenios (si procede)	1
Academic and Research Profile	Dual Use Technologies
Nº de sexenios (si procede)	
Professional experience	Redacción de Proyectos Industriales, Estudios, Inspecciones y auditoras en Seguridad Industrial y Laboral, redacción de expedientes técnicos de construcción de maquinaria, Auditor certificado en Inspección de Atmósferas Explosivas, Proyectos de Ingeniería Hospitalaria, miembro de la Asociación Española de Ingeniería Hospitalaria, etc.
Additional Work frame	Proyectos de Ingeniería de Organización Industrial

3. Subject Description

3.1. General description

Project in Industrial Engineering is a course which main scope is to provide the theoretical and practical knowledge that are required by the industrial activity in order to achieve all the engineer competences in relationship with Industrial Engineering procedures and project management standards.

3.2. How the subject contributes to the professional career

This course will developed the first professional skills of the students as future industrial engineers in relationship with the degree "Grado de Ingeniería de Organización Industrial". These skill involve to dominate the design, planning, control and supervision phases and the tasks and activities which are aimed to accomplished efficiently the project goals.

The requirements of management limited resources, cost, timing and Knowledge, R&D+i are the foundations of the Competitive Organization Improvement integration as today main survival frontier to enforce the industrial activity which is one of the future graduates mission and objective.

3.3. Relationship with other subjects

This Subject belongs to a group that is built with other Industrial Engineering Subjects from technical science, scientific sciences, common subjects of this degree and under a multidisciplinary framework that answer the industrial needs where all the course knowledge is applied to reach the maximum productivity and efficiency range.

The Subject is interrelated with side by side and up to bottom subjects to guarantee the success of the full learning processes but it does not require any specific subject to be passed before as a previous requirement.

3.4. Incompatibilities defined in the programme

Not Defined.

3.5. Recommendations

Follow the schedule provided by the professor at any time

3.6. Special Foreseen Measures

It is highly recommended to attend to all the workshops and seminars which were summoned by the teacher in charge.

4. Competences and Learning Outcomes

4.1. Basic curricular competences related to the subject. KEY COMPETENCIES

KC2. Students must know how to professionally apply their knowledge to their work or vocation and have the skills to make and defend arguments and solve problems in their area of study.

4.2. GENERAL COMPETENCIES

GC1. Ability to organize and manage companies and institutions, evaluating issues related to organizational behavior and resource management.

4.3. SPECIFIC COMPETENCIES

SC18. Plan, prepare and manage projects and reports in the area of Industrial Organization Engineering.

SC20. Select and implement study methods for working, planning and managing production and projects.

4.4. CROSS-CURRICULAR COMPETENCIES

CCC5. Practical application of the acquired knowledge

4.5. Subject learning outcomes**

Once the course is finished, it is expected that the student achieve the next outcomes:

- 1) Earn the theoretical and practical knowledge needed to attend the industrial needs in relationship with industrial engineering and project management.
- 2) Own an academy methodology suitable to the professional planning, control and supervision reality.
- 3) Strengthen the ability to interact within multidisciplinary environments by putting together several knowledge domains to achieve the expected goals in terms of efficiency and competitive improvement of the professional labour.
- 4) Lead and promote the creativity into their professional environment.
- 5) Improve the analysis and summarize ability.
- 6) Have a good command on technical communications between several areas to achieve a common goal assuming for this purpose the responsibility defined at any time for the professional future development.

**** see also the ANECA guideline to take into practices the learning evaluations processes.**

http://www.aneca.es/content/download/12765/158329/file/learningoutcomes_v02.pdf

5. Contents

5.1. Contents according to the Degree Programme

Project Typologies, Industrial Guidelines, Regulations & Standards, Management, Viability Analysis, Project Execution, Industrial Labour Safety Practices, Project Management and Professional ethics have been group together under the next two main sections of the subject:

5.2. Theoretical Programme.

SECTION I: INDUSTRIAL ENGINEERING PROJECTS.

BLOC I: BASIS AND PROJECT TYPOLOGIES.

Typologies and definitions. Life cycle of the projects and initial considerations.
Technical Industrial Projects (Regulations, Guidelines, Best Practices, Formal Report).
Basic Project and Execution Projects.
Viabilities Analysis Projects.
Industrial Safety and other Project development in Hazards Prevention Projects.
Contracts and Projects Auditing.
Professional ethics

BLOC II: R&D+i PROJECT (UNE 166002)

Innovation Management. UNE 166000 Standards.
General Documentations and Requirements of R&D+i development.
R&D+i Management Guidelines.
Resources Management for R&D+i.
R&D+i activities for R&D+i.

BLOC III: DEFENCE PROGRAMS AND PROJECTS.

Singularities of the Defence Project Development Programms.
Acquisition Processes.
Offset Projects.

SECTION II: PROJECT MANAGEMENT AND NEW PROJECT TOOLS

BLOC IV: "THEORETICAL PROJECT MANAGEMENT FRAMEWORK".

The Project Manager under PMI & IPMA Scopes.
Project Integration.
Scope Statement, Human Resources, Timing and Cost Management.
Risk Project Control and Quality assurance.
Acquisitions management.
Communication Management.
Corporate Social responsibility.

BLOC V: PROJECT MANAGEMENT TOOLS.

Changes Control on Project Chart to close projects.
Resources Management through Software tools.

BLOC VI: 3D PRINTERS APPLIED TO DEFENCE PROGRAMMES DEVELOPMENT.

3d Printer systems

Modelling Software

Trends in 3d Print for Defence Applications.

5.3. Practical Programme

SECTION I: INDUSTRIAL ENGINEERING PROJECTS.

BLOC I: BASIS AND PROJECT TYPOLOGIES.

PR01: Preliminary Budgets Report. From a Case of study provide by the teacher, the student should be able to redact a budget report, for that purpose the student will use the online applications and the teacher guideline.

BLOC II: R&D+i PROJECT (UNE 166002)

PR02: R&D+i Report. The student will redact a professional report based on a case of study.

BLOC III: DEFENCE PROGRAMS AND PROJECTS.

PR03: Professional Report on UNE-ISO 21500 regulation. The student will have to analyze this regulation in relationship with Defence interest.

SECTION II: PROJECT MANAGEMENT AND NEW PROJECT TOOLS

BLOC IV: "THEORETICAL PROJECT MANAGEMENT FRAMEWORK".

BLOC V: PROJECT MANAGEMENT TOOLS.

PR04: MSPROJECT. Follow the teacher msproject walkthrough for a case of study.

BLOC VI: 3D PRINTERS APPLIED TO DEFENCE PROGRAMMES DEVELOPMENT.

PR05: 3D CAD. Workshop on 3d Printers and CAD design concepts changes.

Prevención de riesgos

La Universidad Politécnica de Cartagena considera como uno de sus principios básicos y objetivos fundamentales la promoción de la mejora continua de las condiciones de trabajo y estudio de toda la Comunidad Universitaria.

Este compromiso con la prevención y las responsabilidades que se derivan atañe a todos los niveles que integran la Universidad: órganos de gobierno, equipo de dirección, personal docente e investigador, personal de administración y servicios y estudiantes.

El Servicio de Prevención de Riesgos Laborales de la UPCT ha elaborado un "Manual de acogida al estudiante en materia de prevención de riesgos" que puedes encontrar en el Aula Virtual, y en el que encontraras instrucciones y recomendaciones acerca de cómo actuar de forma correcta, desde el punto de vista de la prevención (seguridad, ergonomía, etc.), cuando desarrolles cualquier tipo de actividad en la Universidad. También encontrarás recomendaciones sobre cómo proceder en caso de emergencia o que se produzca algún incidente.

En especial, cuando realices prácticas docentes en laboratorios, talleres o trabajo de campo, debes seguir todas las instrucciones del profesorado, que es la persona responsable de tu seguridad y salud durante su realización. Consúltale todas las dudas que te surjan y no pongas en riesgo tu seguridad ni la de tus compañeros.

5.4. Syllabus in English

UNIT I: BASICS AND TYPOLOGIES ANALYSIS ABOUT INDUSTRIAL ENGINEERING

UNIT II: RESEARCH AND INNOVATION PROJECTS (UNE 166002)

UNIT III: OFFSET PROGRAMS AND DEFENCE PROJECTS.

UNIT IV: "PROJECT MANAGEMENT.

UNIT V: PROJECT MANAGEMENT TOOLS.

UNIT VI: 3D PRINT TOOLS FOR DEFENCE APPLICATIONS

5.5. Detailed description of learning goals for every teaching module

Learning Goals:

- 1) To reach the theoretical and practice knowledge to attend any need of the industrial activity.
- 2) Develop an academy methodology suitable for the incoming future industry in terms of planning, control and supervision.
- 3) Acquire the ability to interact under multidisciplinary environments interacting different fields of knowledge to reach the goals defined previously.
- 4) Lead and promote the industrial creativity.
- 5) Improve the analysis and synthesis ability.
- 6) To be fluent in the use of technical language as a communication tool to reach the desire goals tanking the charge of the leader responsibility in relationship with the professional future development.

6. Metodología docente

6.1. Teaching Methodology *			
Actividad*	Técnicas docentes	Trabajo del estudiante	Horas
Theoretical Classes	Expositive lesson.	<u>Attendance</u> : Active attendance is a must.	30
	Some lesson will use technical english language in order to approach the students to a real future framework.	<u>Non-attendance</u> : Individual Subject Study..	
Practical Classes	Review of the Cases of study used by the teacher. Workshop and other seminars in relationship with the subject..	<u>Attendance</u> : Follow the practical schedule.	23
		<u>Non-attendance</u> : Write the report of each unit.	
Individual Tutorials	Student's clearing up of doubts and queries upon request	<u>Attendance</u> : clearance of individual doubts and queries	5
		<u>Non-attendance</u> : Question answered through email..	
Final Course Report	Each student must work in a teamwork to achieve a goal defined by the teacher. Each student will be responsible of one section of the final report.	<u>Attendance</u> :. Oral exposition about the report results.	31
		<u>Non-attendance</u> : Write the report and prepare all the graphical information requested.	
Other Reports	Each student must work on his own reports along the course. This report will be based on the teacher individual challenges for students.	<u>Presencial</u> :.	22.5
		<u>No presencial</u> :	
Individual Assessment	written assessment	<u>Presencial</u> :. Exam	1
		<u>No presencial</u> :	
			112,5

6.2. Resultados (4.5) / actividades formativas (6.1)

	Resultados del aprendizaje (4.5)									
Actividades formativas (6.1)	1	2	3	4	5	6	7	8	9	10
Expositive Lecturer	X	X				X				
Practical lesson and workshops	X	X		X		X				
Tutorials			X	X	X					
Final Course Report										
Other Reports	X		X	X	X	X				
Individual Assessment	X	X			X	X				

One the course is finished, it is expected that the student achieve the next outcomes:

- 1) Earn the theoretical and practical knowledge needed to attend the industrial needs in relationship with industrial engineering and project management.
- 2) Own an academy methodology suitable to the professional planning, control and supervision reality.
- 3) Strengthen the ability to interact within multidisciplinary environments by putting together several knowledge domains to achieve the expected goals in terms of efficiency and competitive improvement of the professional labour.
- 4) Lead and promote the creativity into their professional environment.
- 5) Improve the analysis and summarize ability.
- 6) Have a good command on technical communications between several areas to achieve a common goal assuming for this purpose the responsibility defined at any time for the professional future development.

7. Evaluation Criteria

7.1. Assessment Criteria*

Actividad	Tipo		Sistema y criterios de evaluación*	Peso (%)	Resultados (4.5) evaluados
	Sumativa*	Formativa*			
Written Exam (optional)		X	EXAMEN FINAL The final global exam, may include short type question, test with different options, short calculations, and any other options that will be mentioned on the final exam call. To pass this exam and evaluate it with the rest items, the student ought o pass with a minimum of 5 points out of 10	Up to 60%	1,2,5,6
Sumative Test and other exams to evaluate the rest of formative actions: Teacher evaluation of reports, Side-correction under teacher criteria Evaluation of Individual report to check out the summative learning process.		X	The student ought to submit on time to the teacher a final report, collecting all the singular assignments, problems among other task requested by the teacher. (20%) The student must develop the individual work inside a team to work on a final challenge based in a final project. (30%) Any unauthorized use of data or information without its correct reference will be handled as non legal copy and will make the student to fail the subject according to the university procedures.	Up to 50%	1,3,4,6
All practice work/report will be evaluated according to the signatures that will be published at the web page for the subect					

Tal como prevé el artículo 5.4 del *Reglamento de las pruebas de evaluación de los títulos oficiales de grado y de máster con atribuciones profesionales* de la UPCT, el estudiante en el que se den las circunstancias especiales recogidas en el Reglamento, y previa solicitud justificada al Departamento y admitida por este, tendrá derecho a una prueba global de evaluación. Esto no le exime de realizar los trabajos obligatorios que estén recogidos en la guía docente de la asignatura.

7.2. Control and Monitoring Methods

he Academy activity fill be followed by the teacher through individual interviews, called when necessary or while individual tutorial takes places. Some other techniques like virtual activity monitoring will be use through the "Virtual Classroom Application"

8 Resources and Bibliography

8.1. Basic Suggested Bibliography*

- Apuntes del profesor en Aula Virtual
- Guide to the Project Management Body of Knowledge. Project Management Institute. 5th edition. ISBN- 978-1-935589-67-9
- Fundamentos de la dirección y gestión de proyectos. Gómez-Senent Martínez, Eliseo González Cruz, Mari Carmen Poveda Bautista, Rocío Nº Edición: 1 / 20-06-2007 ISBN: 978-84-8363-128-7
- Guía práctica de aplicación del Código Técnico de la Edificación (CTE) Antonio Rubinos Fuentes, Jesús Manuel Rubio Alonso. AENOR (Asociación Española de Normalización y Certificación), 2009 ISBN: 978-84-8143-607-5

8.2. Supplementary Bibliography*

- See the Virtual Classroom application.

8.3. Recursos en red y otros recursos

- Last year Notes.
- Código Técnico de la Edificación.
- Reglamentos de Instalaciones Industriales.
- Tramitación y legislación.
- Generador de Precios online.
- INSHT .Guías de Seguridad Establecimientos industriales.