



1. General information

Course: ENGINEERING PROJECTS

Type: CORE COURSE

Degree: 352 - UNDERGRADUATE DEGREE PROGRAMME IN MECHANICAL ENGINEERING (AB)

Center: 605 - SCHOOL OF INDUSTRIAL ENGINEERS. AB

Year: 4

Main language: Spanish

Use of additional languages:

Web site:

Code: 56329

ECTS credits: 6

Academic year: 2021-22

Group(s): 11

Duration: First semester

Second language: English

English Friendly: Y

Bilingual: N

Lecturer: JOSE IGNACIO MUÑOZ HERNANDEZ - Group(s): 11

Building/Office	Department	Phone number	Email	Office hours
Edificio Politécnico 2-A29	MECÁNICA ADA. E ING. PROYECTOS	Via Teams	joseignacio.munoz@uclm.es	Any time of the week, upon request via e-mail, according to availability.

Lecturer: LUIS SERRANO GOMEZ - Group(s): 11

Building/Office	Department	Phone number	Email	Office hours
EIIAB/1.B8.A	MECÁNICA ADA. E ING. PROYECTOS	8252	luis.serrano@uclm.es	Mondays, from 18:00 to 20:00.

2. Pre-Requisites

In order for the students to achieve the learning objectives described, it is highly recommended to have passed the subjects of the previous courses that allow the student to have a general idea of this subject, especially those related to technology, calculation, design and development of an engineering project.

It is also advisable to have, at least, a basic level of English.

3. Justification in the curriculum, relation to other subjects and to the profession

In this subject, the professional attributions of the Graduate in Industrial Engineering are described. It also studies the morphology and contents of Industrial Projects, Technical Reports, Assessments and Appraisals, Health&Safety and Prevention Studies, Construction Management, Planning and Control, Cost Control, etc.

The development of generic skills and competences such as teamwork, autonomous learning, use of computer tools and the ability to apply knowledge to practice is also encouraged.

4. Degree competences achieved in this course

Course competences

Code	Description
A0	Promote respect, Human Rights and the principles of universal accessibility and design for everyone in accordance with the provisions in the final part of Law 51/2003, of 2 December, Equal Opportunities, non-discrimination and universal accessibility for disabled people.
A02	To know how to apply knowledge to work or vocation in a professional manner and possess the competences that are usually demonstrated by the formulation and defence of arguments and the resolution of problems in the field of study.
A03	To have the capability to gather and interpret relevant data (normally within the area of study) to make judgements that include a reflection on themes of a social, scientific or ethical nature.
A07	Knowledge of Information Technology and Communication (ITC).
A08	Appropriate level of oral and written communication.
A09	Ethical and professional commitment.
A10	Ability to produce and develop projects in the field of industrial engineering and automation aimed at, and in accordance with the knowledge acquired as established in section 5 of Order CIN/351/2009, the construction, remodelling, repair, conservation, demolition, manufacturing, installation, assembly or use of: structures, mechanical equipment, power installations, electrical and electronic installations, industrial plants and installations and processes of manufacture and automatization.
A11	Ability to manage engineering project activities described in the previous competency.
A13	Ability to take the initiative to solve problems, take decisions, creativity, critical reasoning and ability to communicate and transmit knowledge, skills and abilities in Mechanical Engineering.
A14	Knowledge to undertake measurements, calculations, evaluations, appraisals, studies, give expert opinions, reports, work plans and similar tasks.
A15	Ability to work to specifications and comply with obligatory rules and regulations.
A16	Ability to analyse and evaluate the social and environmental impact of technical solutions.
A18	To have organization and planning skills used in businesses and other institutions and organizations.
A19	Ability to work in a multilingual and multidisciplinary environment.

5. Objectives or Learning Outcomes**Course learning outcomes**

Description

Awareness of the necessity to adapt engineering projects to ensure the least damage possible to the surroundings and environment

Know all the functions of the works' management, their functions and their responsibilities

Knowledge of the different tasks carried out in a project office

Knowledge of the main information applications used in the production, processing and control of projects

Ability to analyze and compare different alternatives put forward from the economic point of view of a project

Ability to design, write and manage all of the documents that make up the structure of an industrial project or any technical document that this type of professional has to produce. Fundamental documents: reports, plans, specifications, budgets, health and safety documents, environmental documents, control of deadlines and times.

Ability to express and defend ideas, problems and solutions in the field of engineering projects

Ability to manage any type of project

Understand and interpret the importance of current regulations and legislation applied to industrial engineering works and their implementation in industrial projects

Know the general aspects related to environmental and sustainable technologies

6. Units / Contents

Unit 1: Introduction.

Unit 2: Documents, Contents and Elaboration.

Unit 3: Economic and Financial Assessment.

Unit 4: Legislation and Regulations.

Unit 5: Quality and Human Resources.

Unit 6: Safety and Health. Environmental Management.

Unit 7: Patents and Industrial Property Rights.

Unit 8: Legal Processing of Projects.

Unit 9: Project Execution and Direction.

Unit 10: Project Planning, Programming and Control.

ADDITIONAL COMMENTS, REMARKS

Workshop 1: Project Budgeting with Arquímedes.

Workshop 2: Project Profitability Assessment with Excel.

Workshop 3: Project Scheduling with Project.

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	A0 A02 A03 A07 A08 A09 A10 A11 A13 A14 A15 A16 A18 A19 C12	0.92	23	Y	N	Interactive master class, with blackboard and projector
Problem solving and/or case studies [ON-SITE]	Project/Problem Based Learning (PBL)	A0 A02 A03 A08 A09 A10 A13 A15 A18 A19	0.48	12	Y	Y	Solving problems or case studies during the class in a interactive manner
Computer room practice [ON-SITE]	Work with simulators	A0 A02 A03 A07 A08 A09 A10 A11 A13 A14 A15 A16 A18 A19	0.56	14	Y	Y	Workshops with PCs and specific software.
Practicum and practical activities report writing or preparation [OFF-SITE]	Work with simulators	A0 A02 A03 A07 A08 A09 A10 A11 A13 A15 A18 A19	0.4	10	Y	Y	Activities and workshops reporting
Other on-site activities [ON-SITE]	Workshops and Seminars	A0 A02 A03 A07 A08 A09 A13 A19	0.12	3	Y	Y	Talks, presentations or seminars by professionals with experience in engineering projects development
Writing of reports or projects [OFF-SITE]	Group Work	A0 A02 A03 A07 A08 A09 A10 A11 A13 A14 A15 A16 A18 A19 C12	3.2	80	Y	Y	Autonomous self study of the student, supervised by the teacher.
Group tutoring sessions [ON-SITE]	Group tutoring sessions	A0 A02 A03 A07 A08 A09 A10 A11 A13 A14 A15 A16 A18 A19 C12	0.16	4	N		Meetings with groups. Direct interaction teacher-students to solve doubts
Progress test [ON-SITE]	Assessment tests	A0 A02 A03 A07 A08 A09 A10 A11 A13 A14 A15 A16 A18 A19 C12	0.16	4	Y	N	Exam / Test / Work Final Defense
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of activities done in the computer labs	20.00%	20.00%	Workshops at PC lab, using specific software
Assessment of active participation	5.00%	5.00%	Talk and seminars attendance and reporting
Other methods of assessment	35.00%	35.00%	Industrial engineering project's documents elaboration, report and presentation
Final test	40.00%	40.00%	Written exam with theoretical questions, computer tests, case studies, exercises and/or problems. To overcome this test it will be necessary to obtain a minimum rating of 5 Points
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

Continuous evaluation of all training processes that will be weighted to obtain a final grade between 0 and 10 according to the current legislation (Real Decreto 1125/2003 de 5 de septiembre). The evaluation of the student is the result of the course follow-up and / or the exam or written test that will consist of theoretical questions and practical exercises. The course follow-up is based on:

- Evaluation of the assimilation of concepts and procedures through written tests.
- Evaluation of the acquisition of practical skills through an ad-hoc built profile of competences that considers the documentation submitted by the student, individually or in small groups, through reports, the work developed, and the skills and attitudes shown during assessments and guided practical activities.
- Evaluation of academic work carried out by students outside of class and supervised by the professor, individually or in small groups. The student must make, deliver, and defend before the professor a report with some of the proposed exercises. The professor will assess the presentation, exhibition, defense, and difficulty of the chosen exercises.
- Evaluation of laboratory practices in the computer room with application of specific software by assessing the attendance to the practices, the delivery of the work done in class, and the realization of a practical test in the same classroom.

The final grade of the student is from 0 to 10 points, taking into account the following remarks:

- The grade obtained in the progress tests (partial exams) is saved until the ordinary call. To pass and be able to weight the subject of each partial, a minimum grade of 4 points must be obtained.
- The grade obtained in the elaboration of reports of practices is saved until the extraordinary call.
- The grade obtained in the elaboration of reports or works (the project of the subject) is saved until the extraordinary call.

Non-continuous evaluation:

Attendance at seminars may be replaced by individual work related to the presentations.

The software installed in the computer lab to perform the practices will be accessible free of charge for individual installations. The final exam have to be carried out in the computer lab.

Specifications for the resit/retake exam:

The students who have not attended and delivered the practice reports and / or the project of the subject will attend it. In order to pass the subject in the extraordinary call, they must deliver the practice reports and the project of the subject in addition to take the final test that will include all the contents of the subject.

Non-continuous evaluation:

- The percentage of work related to seminars (5%) will be integrated into the final exam that changes its weight from 40% to 45%.
- The software installed in the computer lab to perform the practices will be accessible free of charge for individual installations. The final exam will be replaced by a job.

Therefore, the weighting of evaluable activities shall be:

- Lab activities: 20%
- Group Work: 35%
- Exam: 45%

Students who do not attend the extraordinary session will be considered as NOT TAKEN.

Specifications for the second resit / retake exam:

As in the first resit

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Computer room practice [PRESENCIAL][Work with simulators]	10
Practicum and practical activities report writing or preparation [AUTÓNOMA][Work with simulators]	10
Writing of reports or projects [AUTÓNOMA][Group Work]	80

Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	4
Progress test [PRESENCIAL][Assessment tests]	4
Unit 1 (de 10): Introduction.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	1
Unit 2 (de 10): Documents, Contents and Elaboration.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	7
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	3
Computer room practice [PRESENCIAL][Work with simulators]	2
Unit 3 (de 10): Economic and Financial Assessment.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	1
Computer room practice [PRESENCIAL][Work with simulators]	2
Unit 4 (de 10): Legislation and Regulations.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	2
Unit 5 (de 10): Quality and Human Resources.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	1
Unit 6 (de 10): Safety and Health. Environmental Management.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Other on-site activities [PRESENCIAL][Workshops and Seminars]	2
Unit 7 (de 10): Patents and Industrial Property Rights.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	1
Unit 8 (de 10): Legal Processing of Projects.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Other on-site activities [PRESENCIAL][Workshops and Seminars]	1
Unit 9 (de 10): Project Execution and Direction.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	1
Unit 10 (de 10): Project Planning, Programming and Control.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	2
Global activity	
Activities	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	23
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	12
Computer room practice [PRESENCIAL][Work with simulators]	14
Practicum and practical activities report writing or preparation [AUTÓNOMA][Work with simulators]	10
Other on-site activities [PRESENCIAL][Workshops and Seminars]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	80
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	4
Progress test [PRESENCIAL][Assessment tests]	4
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
A. Gonzalez Marcos et al.	INGENIERÍA DE PROYECTOS	Dextra	Madrid	978-84-16277-01-8	2014	Compendio de la Ingeniería de Proyectos
J. Contreras Sanz, J. I. Muñoz Hernández	PROYECTOS	UCLM	Ciudad Real	978-84-608-0640-0	2007	Proyectos de ingeniería
J. Oliver Sánchez	MANUAL-GUÍA DE COORDINACIÓN DE SEGURIDAD Y SALUD EN OBRAS INDUSTRIALES	Aprender	Albacete	978-84-938959-9-0	2014	Prevención de Riesgos Laborales
M. de Cos Castillo	TEORÍA GENERAL DEL PROYECTO Vol. II: INGENIERÍA DE PROYECTOS	Síntesis	Madrid	978-84-773845-2-6	2007	Ingeniería de proyectos

C. Chatfield, T. Johnson	STEP BY STEP - MS PROJECT 2015	Microsoft Press	Redmond	978-0-7356-6911-6	2015	Manual de Software
R. Soriano Domenech	PROJECT 2016 CURSO PRÁCTICO PASO A PASO	Altaria	Tarragona	978-84-944776-4-5	2016	Manual de Software