

**1. General information****Course:** LAYOUT AND DESIGN OF INDUSTRIAL FACILITIES**Code:** 56370**Type:** ELECTIVE**ECTS credits:** 6**Degree:** 421 - UNDERGRADUATE DEGREE PROG. IN MECHANICAL ENGINEERING**Academic year:** 2022-23**Center:** 602 - E.T.S. INDUSTRIAL ENGINEERING OF C. REAL**Group(s):** 20**Year:** 4**Duration:** C2**Main language:** Spanish**Second language:** English**Use of additional languages:****English Friendly:** Y**Web site:****Bilingual:** N**Lecturer:** JAVIER CONTRERAS SANZ - Group(s): 20

Building/Office	Department	Phone number	Email	Office hours
Edificio Politécnico 2-D12	MECÁNICA ADA. E ING. PROYECTOS	Vía Teams	Javier.Contreras@uclm.es	To guarantee the correct individualized attention of the student, the tutoring schedule will be arranged with the student by email.

2. Pre-Requisites

It is expected that, at the end of the course, the student has the ability to design a facility including its structure and installations.

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

The objective of the course is to provide the student with sufficient technical knowledge to be able to undertake the design and calculation of an industrial facility, including both the architectural construction and its installations.

4. Degree competences achieved in this course**Course competences**

Code	Description
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
CEO39	Capacity to design industrial installations and complexes, with a reduced environmental impact.
CG03	Knowledge of basic and technological subjects to facilitate learning of new methods and theories, and provide versatility to adapt to new situations.
CG04	Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of industrial engineering.
CG05	Knowledge required to carry out measurements, calculations, valuations, appraisals, valuations, surveys, studies, reports, work plans and other similar work.
CG06	Ability to handle specifications, regulations and mandatory standards.
CG07	Ability to analyse and assess the social and environmental impact of technical solutions.
CT02	Knowledge and application of information and communication technology.
CT03	Ability to communicate correctly in both spoken and written form.

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

Ability to undertake the design of an industrial complex, including its structure and the necessary facilities.

Additional outcomes

The objective of the subject is to provide the student with sufficient technical knowledge so that he/she can undertake the design and calculation of an industrial complex, including both the architectural construction and the facilities thereof.

6. Units / Contents**Unit 1: Introduction****Unit 2: Product, process and schedule design****Unit 3: Flow, space and activity relationships****Unit 4: Layout planning models and design algorithms****Unit 5: Quantitative models of design of facilities**

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	CB01 CB02 CB03 CB04 CB05 CEO39 CG03 CG04 CG05 CG06 CG07 CT02 CT03	0.96	24	N	-	
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	CB01 CB02 CB03 CB04 CB05 CEO39 CG03 CG04 CG05 CG06 CG07 CT02 CT03	0.32	8	N	-	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	CB01 CB02 CB03 CB04 CB05 CEO39 CG03 CG04 CG05 CG06 CG07 CT02 CT03	0.8	20	Y	Y	
Formative Assessment [ON-SITE]	Assessment tests	CB01 CB02 CB03 CB04 CB05 CEO39 CG03 CG04 CG05 CG06 CG07 CT02 CT03	0.32	8	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	CB01 CB02 CB03 CB04 CB05 CEO39 CG03 CG04 CG05 CG06 CG07 CT02 CT03	3.6	90	N	-	
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
Final test	0.00%	25.00%	A final test will be done at the end of the course
Projects	45.00%	45.00%	A group work will be delivered at the end of the term. Students will make a group presentation of the work (15%)
Mid-term tests	25.00%	0.00%	Partial theoretical-practical tests will be carried out throughout the course
Assessment of activities done in the computer labs	15.00%	15.00%	Students will do individual practices of software programs
Assessment of problem solving and/or case studies	15.00%	15.00%	Practical cases will be solved assessing the application of techniques learned in class
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 current legislation as follows:

- Evaluation of laboratory practical classes in the computer room with application of specific software by assessing attendance at practical classes as well as the delivery of work done in a practice test in the computer room.
- Tests consisting of the resolution of practical exercises similar to those carried out in the training activities throughout the course.
- Written exams with theoretical questions, practice and case studies.
- Supervised group work and group presentation throughout the course.

Non-continuous evaluation:

Evaluation of all training processes that will be weighted to obtain a final grade between 0 and 10 according to current legislation as follows:

- Laboratory practical cases exam with specific software application.
- Single delivery of practical exercises similar to those carried out in training activities throughout the course.
- Written final exam with theoretical questions, practice and case studies.
- Supervised individual work and final presentation.

Specifications for the resit/retake exam:

None.

Specifications for the second resit / retake exam:

None.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	24
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	8
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Formative Assessment [PRESENCIAL][Assessment tests]	8
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Global activity	
Activities	hours
Formative Assessment [PRESENCIAL][Assessment tests]	8
Class Attendance (theory) [PRESENCIAL][Lectures]	24
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	8
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Enrique Mata Landete	Curso de introducción al urbanismo industrial					
James A. Tompkins, John A. White, Yavuz A. Bozer, J.M.A. Tanchoco	Facilities Planning	Wiley		978-0470444047	2010	
Javier Contreras y José Ignacio Muñoz	Complejos industriales	UCLM		84-608-0549-2	2007	