

**1. General information****Course:** LAYOUT AND DESIGN OF INDUSTRIAL FACILITIES**Code:** 56370**Type:** ELECTIVE**ECTS credits:** 6**Degree:** 353 - UNDERGRADUATE DEGREE PROG. IN MECHANICAL ENGINEERING (CR)**Academic year:** 2023-24**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. Preferably Tuesdays, Wednesdays and Thursdays from 9 to 11.

2. Pre-Requisites

The student must have the following knowledge and skills:

- Knowledge: theory of structures, electrical technology, mechanical technology, among others.
- Basic skills in the use of computers.
- Knowledge of English, at least at the basic level.

At the end of the course the student should have 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 subject of Facilities Planning is related to the subjects of the Mechanical Degree: Design and Calculation of Metallic and Concrete Structures and Theory of Structures and Industrial Constructions. The aim is that at the end of the course the student has the ability to design an industrial facility and its structure and installations.

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

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

Code	Description
A04	To be able to transmit information, ideas, problems and solutions to a specialized audience.
A08	Appropriate level of oral and written communication.
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.

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

Not established.

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 design models 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	A10 A11	0.5	12.5	N	-	
Class Attendance (practical) [ON-SITE]	Project/Problem Based Learning (PBL)	A10 A11	0.3	7.5	Y	N	
Class Attendance (practical) [ON-SITE]	Work with simulators	A10 A11	0.8	20	Y	Y	
Practicum and practical activities report writing or preparation [OFF-SITE]	Work with simulators	A04 A08 A10 A11	0.4	10	Y	Y	
Group tutoring sessions [ON-SITE]	Group tutoring sessions	A10	0.4	10	N	-	
Formative Assessment [ON-SITE]	Assessment tests	A04 A08 A10 A11	0.16	4	Y	Y	
Project or Topic Presentations [ON-SITE]	Group Work	A04 A08 A10 A11	0.24	6	Y	Y	
Study and Exam Preparation [OFF-SITE]	Group Work	A04 A08 A10 A11	3.2	80	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
Projects	45.00%	45.00%	A group project will be delivered at the end of the term. Students will make a group presentation of the project (15%)
Mid-term tests	25.00%	25.00%	Theoretical-practical partial tests will be carried out throughout the course
Assessment of activities done in the computer labs	15.00%	15.00%	Students will do individual computer practice
Assessment of problem solving and/or case studies	15.00%	15.00%	Practical cases will be solved evaluating 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. Minimum grade: 4
- Tests consisting of the resolution of practical exercises similar to those carried out in the training activities throughout the course. Minimum grade: 4
- Written exams with theoretical questions, practice and case studies. Minimum grade: 4
- Supervised group work and group presentation throughout the course. Minimum grade: 4

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. Minimum grade: 4
- Single delivery of practical exercises similar to those carried out in training activities throughout the course. Minimum grade: 4
- Written final exam with theoretical questions, practice and case studies. Minimum grade: 4
- Supervised individual work and final presentation. Minimum grade: 4

Specifications for the resit/retake exam:

Students who have not passed the course (grade 5 or higher) will attend it. To pass the subject in the extraordinary call they must pass the practical test, deliver and defend the project of the subject and submit to the final face-to-face test that will include all the contents of the subject.

Students who do not attend the extraordinary call will be considered as NOT SHOWN.

Specifications for the second resit / retake exam:

The same as the extraordinary call.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours

Class Attendance (theory) [PRESENCIAL][Lectures]	12.5
Class Attendance (practical) [PRESENCIAL][Project/Problem Based Learning (PBL)]	7.5
Class Attendance (practical) [PRESENCIAL][Work with simulators]	20
Practicum and practical activities report writing or preparation [AUTÓNOMA][Work with simulators]	10
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	10
Formative Assessment [PRESENCIAL][Assessment tests]	4
Project or Topic Presentations [PRESENCIAL][Group Work]	6
Study and Exam Preparation [AUTÓNOMA][Group Work]	80
Global activity	
Activities	hours
Class Attendance (practical) [PRESENCIAL][Project/Problem Based Learning (PBL)]	7.5
Class Attendance (practical) [PRESENCIAL][Work with simulators]	20
Practicum and practical activities report writing or preparation [AUTÓNOMA][Work with simulators]	10
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	10
Formative Assessment [PRESENCIAL][Assessment tests]	4
Project or Topic Presentations [PRESENCIAL][Group Work]	6
Study and Exam Preparation [AUTÓNOMA][Group Work]	80
Class Attendance (theory) [PRESENCIAL][Lectures]	12.5
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
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	
Enrique Mata Landete	Curso de introducción al urbanismo industrial					