

IDENTIFYING DATA				
Industrial Installations and Innovation				
Subject	Industrial Installations and Innovation			
Code	V04M141V01337			
Study programme	(*)Máster Universitario en Enxeñaría Industrial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	2nd	1st
Teaching language	English			
Department	Design in Engineering Electrical Engineering Mechanical Engineering, Heat Engines & Machines, and Fluids Applied Physics Electronics Technology			
Coordinator	Pou Saracho, Juan María			
Lecturers	Cerqueiro Pequeño, Jorge Feijóo Lorenzo, Andrés Elías Nogueiras Meléndez, Andres Augusto Paz Penín, María Concepción Porteiro Fresco, Jacobo Pou Saracho, Juan María Riveiro Rodríguez, Antonio Sieres Atienza, Jaime			
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Web				
General description	This course has a multidisciplinary nature in order to acquire the necessary skills to tackle integral projects in which they have to design and plan different types of facilities that are safe, efficient and compliant with standards and marked in legislation. The aim is to provide students of structured content in the following sections: Introduction. The diversity of facilities in the field of Industrial Engineering. Complete design of installations in the field of Industrial Engineering. Electrical installation and lighting. Efficient Facilities: Energy saving and efficiency, Design of air conditioning and ventilation Design facilities fluids Intelligent Buildings: Design of communications, automation and intelligent facilities. Secure Infrastructure: Industrial Security. Security system design. Regulations and Legislation. To achieve this objective, the different areas of the ISS proposed multidisciplinary work related to the powers conferred on this matter. Due to the multidisciplinary nature of this field, and the use and management of national and international regulations and legislation is necessary to have an adequate level of English. Therefore requirement is set to demonstrate a level of English B1 or equivalent. This subject is developed and fully evaluated in English.			

Competencies	
Code	
A2	That the students can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.

A3	That students are able to integrate knowledge and handle complexity and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments.
C1	CET1. Project, calculate and design products, processes, facilities and plants.
C5	CET5. Technically and economically manage projects, installations, plants, companies and technology centers.
C7	CET7. Apply their knowledge and solve problems in new or unfamiliar environments within broader contexts and multidisciplinary environments.
C8	CET8. Being able to integrate knowledge and handle complexity and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments.
C27	CGS8. Ability to manage research, development and technological innovation.
C31	CIPC4. Knowledge and skills to plan and design intelligent electrical and fluid, lighting, air conditioning and ventilation, energy saving and, acoustic efficiency facilities, communications, automation and buildings and security installations.
D1	ABET-a. An ability to apply knowledge of mathematics, science, and engineering.
D3	ABET-c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
D4	ABET-d. An ability to function on multidisciplinary teams.
D7	ABET-g. An ability to communicate effectively.
D11	ABET-k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Learning outcomes

Expected results from this subject	Training and Learning Results		
English preparation and presentation of multidisciplinary works related to the powers of this matter, and the use and management of national and international regulations and legislation.	A2 A3	C1 C5 C7 C8 C27 C31	D1 D3 D4 D7 D11
Acquire the necessary knowledge to address comprehensive projects that have to design and plan different types of facilities that are safe, efficient and compliant with standards and marked in legislation.	A2 A3	C1 C5 C7 C8 C27 C31	D1 D3 D4 D7 D11

Contents

Topic	
Design and optimization of red mud neutralization process through CO2 absorption.	I work similar type to the proposed
Automation of an industrial stacker crane and warehouse prototype	I work similar type to the proposed
Lighting and energy efficiency in metal halide lamps	I work similar type to the proposed
Implementation of a Product Lifecycle Management (PLM) system for educational use	I work similar type to the proposed
Design and calculation of a pilot plant to obtain biogas by slurry fermentation	I work similar type to the proposed
Implementation of a position control system based on an air blower	I work similar type to the proposed
Electrical installation design of a business park	I work similar type to the proposed

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	7	14	21
Project based learning	20	40	60
Case studies	20	40	60
Case studies	2	4	6
Laboratory practice	1	2	3

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Introductory activities	Presentation of the means and description of the teams

Project based learning	Work in team to describe the system
Case studies	Study, analysis and/or development of the system

Personalized attention

Methodologies	Description
Case studies	
Introductory activities	
Project based learning	

Tests	Description
Case studies	
Laboratory practice	

Assessment

	Description	Qualification	Training and Learning Results		
Case studies	Exhibition in English by part of student of the project done.	70	A2 A3	C1 C5 C7 C8 C27 C31	D1 D3 D4 D7 D11
Laboratory practice	The projects selected will be able to opt to a second phase of realization in which it will have of additional material to carry out a practical implementation of everything or some part of the project presented.	30			

Other comments on the Evaluation

- In the 2ª announcement of the same course the student will have to examine of the no surpassed parts in the 1ª announcement. - Will have to surpass the first part (oral Exhibition) to approve the matter. - Ethical commitment: it expects that the present student a suitable ethical behaviour. In case to detect a no ethical behaviour (copy, plagiarism, utilisation of unauthorised electronic devices, and others), will consider that the student does not gather the necessary requirements to surpass the matter. In this case the global qualification in the present academic course will be of suspense (0.0). - It will not allow the utilization of any electronic device during the proofs of evaluation except permission expresses. The fact to enter an unauthorised electronic device in the classroom of examination will be considered reason for not passing the subject in the present academic course and the global qualification will be of suspense (0.0).

Sources of information

Basic Bibliography

Complementary Bibliography

G. H. Hundy, A. R. Trott, T. C. Welch, **Refrigeration and Air-Conditioning**, 2008,

Fernández García, Carmen, Pérez Garrido, Daniel Eugenio, **Herramientas de apoyo a la gestión del ciclo de vida del producto. Guía divulgativa PLM**, 2010,

J. L. Fernández, M. G. Rivera, E. P. Domonte, M. D. Medina, **Plataforma basada en elementos industriales para la realizacion de practicas de control.**, 2012,

AENOR, **Electromagnetic compatibility (EMC)**, 2006,

J. García Trasancos, **Instalaciones eléctricas en baja y media tensión**, 2009,

Recommendations