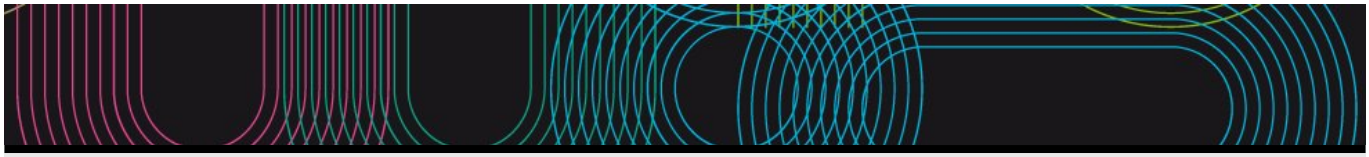

IDENTIFYING DATA				
Industrial Installations and Innovation				
Subject	Industrial Installations and Innovation			
Code	V04M141V01337			
Study programme	(*)Máster Universitario en Enxeñaría Industrial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	2nd	1st
Teaching language	English			
Department				
Coordinator	Trillo Yáñez, María Cristina			
Lecturers	Cerqueiro Pequeño, Jorge Comesaña Campos, Alberto Comesaña Piñeiro, Rafael Fernández Álvarez, Antonio Garrido Campos, Julio Goicoechea Castaño, María Iciar Nogueiras Meléndez, Andres Augusto Paz Penín, María Concepción Pou Saracho, Juan María Riveiro Rodríguez, Antonio Suárez Porto, Eduardo Trillo Yáñez, María Cristina			
E-mail	mctrillo@uvigo.es			
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 EEI 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.			

Skills	
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.	Similar work to the one herein proposed
Automation of an industrial stacker crane and warehouse prototype	Similar work to the one herein proposed
Lighting and energy efficiency in metal halide lamps	Similar work to the one herein proposed
Implementation of a Product Lifecycle Management (PLM) system for educational use	Similar work to the one herein proposed
Design and calculation of a pilot plant to obtain biogas by slurry fermentation	Similar work to the one herein proposed
Implementation of a position control system based on an air blower	Similar work to the one herein proposed
Electrical installation design of a business park	Similar work to the one herein 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	1	2
Oral exam	1	0	1

*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 assistance

Methodologies	**Description**
Case studies	
Introductory activities	
Project based learning	

Tests	**Description**
Case studies	
Laboratory practice	

Assessment

	Description	Qualification	Training and Learning Results		
Case studies	Report and oral presentation (in English) of each project before a jury. Participation in the oral presentation is compulsory to pass the subject.	60	A2 A3	C1 C5 C7 C8 C27 C31	D1 D3 D4 D7 D11
Laboratory practice	Theoretical/practical implementation of the project under the guidance of the supervisor, who will assess individually the performance of each student.	30		C1 C5 C27 C31	D4
Oral exam	Questions asked by each student to students from other groups.	10			D7

Other comments on the Evaluation

- Information about the tests «Case studies» and «Oral exam»:

The work carried out by the students must be included in a report. All the students in each group will prepare and participate in an oral presentation of the work (in English) before a jury.
After the oral presentation of each group, the members of the jury will ask questions to the students of that group. Next, students in the audience (who are themselves enrolled in the subject) will have the opportunity to ask questions to the group.
At the end of the session, each student must have asked at least one question to students from other group. The pertinence of the questions and the answers will be assessed by the jury.

-In an eventual resit (June/July) the student will take an examination of the part not passed in the 1st exam call (January or May/June). It is compulsory to get a pass in the oral presentation to pass the subject.

- Ethical commitment: Students are expected to behave in a suitable ethical manner. If a non-ethical behaviour is detected (e.g., copy, plagiarism, use of unauthorized electronic devices, and others), it will be considered that the student does not fulfill the necessary requirements to pass the course. In that case, the global grade in the present academic year will be a "fail" (0.0).
-The use of any electronic devices during the evaluation session is forbidden unless explicit permission is given by the

lecturer. The mere fact of introducing an unauthorised device in the classroom is reason enough to fail the subject. In that case, the global grade in the present academic year will be "fail" (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

Other comments

In case of discrepancies, the Spanish version of this guide will prevail.