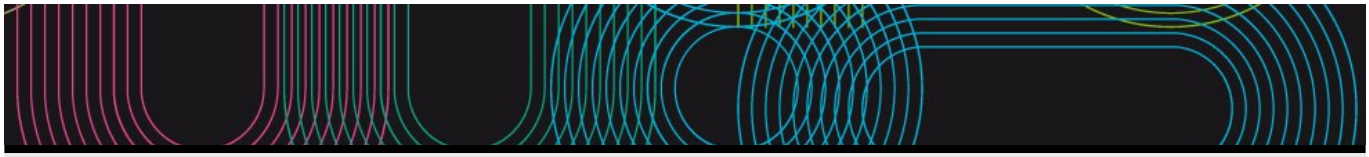

IDENTIFYING DATA				
Industrial Communications				
Subject	Industrial Communications			
Code	V04M093V01104			
Study programme	Máster Universitario en Mecatrónica			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Optional	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Diaz-Cacho Medina, Miguel Ramón			
Lecturers	Diaz-Cacho Medina, Miguel Ramón Garrido Campos, Julio Prado Cambeiro, Jaime			
E-mail	mcacho@uvigo.es			
Web				
General description	(*)Diseño e implementación de sistemas de comunicación para la mecatrónica			

Training and Learning Results	
Code	
B1	(*)Capacidad para proyectar, calcular y diseñar productos y sistemas mecatrónicos
B2	(*)Capacidad para integrar las tecnologías de control, electrónica e informática en el diseño de un componente o de un sistemas mecánico
B5	(*)Capacidad de análisis y síntesis y de resolver problemas y tomar decisiones con iniciativa, creatividad y razonamiento crítico
B6	(*)Destreza en la aplicación de herramientas informáticas en el ámbito de la ingeniería
B7	(*)Capacidad para el manejo de especificaciones, reglamentos y normas de obligado cumplimiento
B10	(*)Capacidad para comunicarse con personas no expertas en la materia y transmitir conceptos, especificaciones y funcionalidades en el campo de la ingeniería, tanto oralmente como de manera escrita
B12	
C2	
C4	

Expected results from this subject	
Expected results from this subject	Training and Learning Results
Skill in the handle of buses of field and his resources.	B6 B7 B10 B12 C2
Knowledge of the foundations of the systems of industrial communication.	B7 B10 B12 C2 C4

Knowledges to design and implement systems of communication for the *mecatrónica	B1 B2 B5 B6 B7 C2 C4
Capacity to monitor and keep buses of field in systems *mecatrónicos complexes	B6 B7 C2

Contents	
Topic	
Subject 1.- Introduction to the industrial communications	Networks of data: networks of company and of factory, networks of cell. Networks of control: networks of controllers, networks of sensors-actuators
Subject 2.- Principles and operation of distinct buses of field	General characteristics. Physical layer. Layer of link. Control of access to the half. Logical control. Layer of application.
Subject 3.- Structural elements of distinct buses of field	Units of entrance-remote exit. Sensors/Actuators with resources of communication integrated. Main modules. Modules runway. *Repetidores. Modules of link.
Subject 4.- Parametrisation and set up of distinct field-buses. Monitoring and Diagnostic	Bus PROFIBUS-DP. Bus PROFINET. Bus ETHERCAT.
Subject 5. IIoT. Protocols and Technologies.	ModBus, MQTT, OPC-UA.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	4	10	14
Case studies	4	20	24
Laboratory practical	8	15	23
Problem and/or exercise solving	2	4	6
Laboratory practice	2	6	8
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Lecturing	Presentation of contents in the classroom with help of computer and audiovisual means.
Case studies	Solution of practical cases with help of computer tools. Work in team.
Laboratory practical	In technological laboratories or in computer classrooms.

Personalized assistance	
Methodologies	**Description**
Case studies	It will orient to the student of individual form on the steps to be followed for the resolution of his doubts.
Laboratory practical	It will work with the student in real time, monitoring *contínuamente his evolution.

Assessment				
	Description	Qualification	Training and Learning Results	
Case studies	Individual work of a case of industrial communications based on the theoretical contents. The work is proposed by the teacher.	30	B1 B6	C2
Problem and/or exercise solving	Written exam	20	B1 B2 B5 B6 B7	C2 C4
Laboratory practice	Realisation and understanding of the practices. Eventually, the assistance to seminars, depending on his nature are valuable.. would be valuable.	50	B10 B12	C2 C4

Other comments on the Evaluation

The evaluation by written exam will suppose 20% of the global qualification. The qualification corresponding to the correct resolution of each one of the questions that compose it will be specifically stated. The sum of these qualifications will be 10

points.

The evaluation of practical tests, execution of real and / or simulated tasks will be part of the overall qualification, and will account for 50% of it. Attendance at practices will account for 25% of the grade and participation and results of the proposed problems will account for 25%. Their evaluation may be carried out continuously, in the form of questions throughout the teaching of the practices. Attendance to the practices will be verified by means of signature sheets.

The case study will consist of individual student work based on the content of the subject. The grade obtained will have a weight of 30% of the global.

The global rating will be calculated as a weighted average of the ratings obtained in each methodology. It will be necessary to obtain a minimum qualification (which will be recorded in each evaluation test) in each of the parts and a global one equal to or greater than 5 points to pass the subject. The evaluation criteria will be specific in each test.

Sources of information

Basic Bibliography

Complementary Bibliography

J.I. Armesto, J. López, R. Marín, **Presentaciones utilizadas en la asignatura**,

E. Mandado, J. Marcos, C. Fernández, J.I. Armesto, **Autómatas programables y sistemas de automatización**, 2ª,

A. Rodríguez, **Comunicaciones industriales**, 1ª,

Recommendations