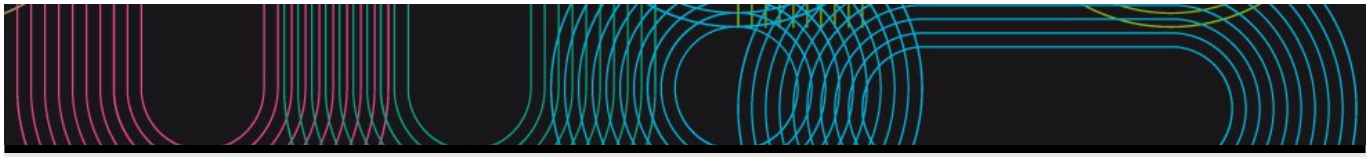
Universidade Vigo

Subject Guide 2020 / 2021



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			

Competencies	
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	

Learning outcomes	
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 buses of field	Bus *PROFIBUS-*DP. Bus *PROFINET. Bus *ETHERCAT.
Subject 5.- Monitoring and diagnostic of operation of distinct buses of field	Bus *PROFIBUS-*DP. Bus *PROFINET. Bus *ETHERCAT.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	12	25	37
Case studies	4	8	12
Laboratory practical	4	8	12
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	
Problem and/or exercise solving	Written exam	40	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.	60	B10 B12	C2 C4

Other comments on the Evaluation

The evaluation by means of a written examination written has a weight of 40% of the final score.

The evaluation of laboratory tasks and or simulated tasks has a weight of 60% of the final score. The assistance to the

laboratory practices will have a weight of 35% of the final score and the resolution of practical problems in laboratory will a have a weight of 25% of the final score.

It is necessary to have a qualification equal or bigger than the 50% of the maximum final score.

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

Contingency plan

Description

=== EXCEPTIONAL MEASURES SCHEDULED ===

STAGE 1: MIXED TEACHING

Because of the exceptional situation, due the impossibility to teach in person, the teaching will be performed in an online way.

For the online teaching, we will use the tools provided by the University, at present the "Remote Campus" and FAITIC tools. Nevertheless it will be able to be complemented by using other means.

STAGE 2: TEACHING COMPLETELY ONLINE.

Because of the exceptional situation, due the impossibility to teach in person, the teaching will be perform in an online way.

All the teaching will use the tools provided by the University, at present the "Remote Campus" and FAITIC tools. Nevertheless it will be able to be complemented by using other means.

=== ADAPTATION OF THE METHODOLOGIES ===

For the laboratory practices, we will substitute the practices that require specific equipment by virtualized practices or simulated ones. Eventually, other similar practices will be proposed that are able to be performed online or at home. The practices will be able to have an autonomous format to prevent conciliation problems and/or connectivity problems..

Tutoring sessions (attention to the students) will be done using telematic tools (Email, FAITIC forums, Remote Campus), that will be complemented by using other means. In some cases an appointment will be necessary.

=== ADAPTATION OF THE EVALUATION ===

The evaluation in the case of no-presence will be done by using of on-line proofs using Remote Campus and FAITIC.

Practical works will be evaluated with a report provided by the students.