GENERAL INFORMATION

Data of the subject

Subject name	Industrial Communication Systems
Subject code	DEAC-MII-631
Mainprogram	Official Master´s Degree in Industrial Engineering
Level	Postgrado Oficial Master
Quarter	Semestral
Credits	4,5 ECTS
Type	Obligatoria
Department	Department of Electronics, Control and Communications
Coordinator	Emilio Manuel Domínguez Adán
Schedule	Evenings
Office hours	Send e-mail to get an appointment Course overview

Teacher Information

Teacher

Name	Emilio Manuel Domínguez Adan
Department	Department of Electronics, Control and Communications
EMail	emdominguez@comillas.edu

Teacher

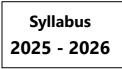|	
Name	Alfonso Vázquez Requejo
Department	Department of Electronics, Control and Communications
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DESCRIPTION OF THE SUBJECT

Contextualization of the subject

Course contents

Contents

Theory

- Part I. Introduction to Industrial Communications. Definition of Industrial Communications. Agents in a communication. Networks and field-busses.
- Part II. Basics in communications. About signals: Fourier and frequency spectrum, bandwidth, and wavelength. About transmission channel: transmission ways (guided and non-guided), network topologies and isolation. About signal transmission: bandwidth, speed transmission, SNR, BER, channel capacity, modulation, multiplexing, media access.
- Part III. Protocol architectures. Logic behavior of communications, OSI model, TCP/IP stack and different network devices.

- Part IV. Industrial applications. Protocols normally used in Industrial Environments. New trends and protocols.

Laboratory

- Practices based on industrial communications protocols using RS232, RS485, optical fiber, Ethernet and wireless communications.

EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
• Final exam (50%). • Quick test (20%).	• Concepts understanding. • Concept application for solving problems. • Analysis and interpretation of obtained results from the problem resolution. • Presentation and written communication.	70
• Laboratory practices.	• Previous job. • Individual work done during the practices. • Quality, analysis and interpretation of obtained results. • On time finishing. • Presentation and oral and written communication. • Initiative.	30

Grading

The grade in the ordinary call is obtained according to the weights indicated in "Evaluation activities", provided that the gradesobtained in the final exam and in the laboratory practices are greater than or equal to 5. Otherwise, the final grade will be the lowest of them.

The qualification in the extraordinary call of the subject will be obtained in the same way as in the ordinary call placing the note of the final exam by the one obtained in the extraordinary test. Students who have failed the course and obtained a grade lower than 4 in the laboratory will be examined in an extraordinary call.

Class attendance is mandatory, according to the Academic Regulations of the Escuela Técnica Superior de Ingeniería (ICAI).

The requirements of attendance will be applied independently for theory and laboratory sessions:

- In the case of theory sessions, failure to comply with this rule may prevent you from taking the exam in the call ordinary.
- In the case of laboratory sessions, failure to comply with this rule may prevent you from taking the exam in the call ordinary and extraordinary. In any case, unjustified absences from laboratory sessions will be penalized in the evaluation.

WORK PLAN AND SCHEDULE

Activities	Date of realization	Delivery date
Quick test	7th or 8th week according to Academic Calendar	

Final exam	Ordinary exam period	
Laboratory practices	During six weeks	
Theory classes	Weekly	

BIBLIOGRAPHY AND RESOURCES

Basic References
Slides and notes of the subject.