Last update: 15-06-2018

295202 - ISA - Integration of Automatic Systems

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering

Teaching unit: 707 - ESAII - Department of Automatic Control

Academic year: 2018

Degree: BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)

ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Gámiz Caro, Javier Francisco

Others: Gamiz Caro, Juan
Lluva Serra, Marc
Guerra Paradas, Edmundo
Lavèrnia Ferrer, David

Requirements

Have studied the subject of Information Systems and Industrial Communication (SICIEIA)

Degree competences to which the subject contributes

Specific:

CEEIA-26. Understand automatic regulation and control techniques and their application to industrial automation.

CEEIA-27. Understand the principles and applications of automated systems.

CEEIA-28. Apply their knowledge to industrial informatics and communications.

CEEIA-29. Design automatic control systems.

Generical:

CG-03. (ENG) Conocimiento en materias básicas y tecnológicas, que les capacite para el aprendizaje de nuevos métodos y teorías y les dote de versatilidad para adaptarse a nuevas situaciones.
CG-04. (ENG) Capacidad de resolver problemas con iniciativa, toma de decisiones, creatividad, razonamiento crítico y de comunicar y transmitir conocimientos, habilidades y destrezas en el campo de la Ingeniería Industrial.

Transversal:

06 URI N2. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.
07 AAT N3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

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Learning objectives of the subject

Learn about the different technologies for production automation.
Meet and implements the various processes to be developed to when designing and implementing an automation project.
Design and known techniques of communication between applications in SCADA systems.
Apply criteria Industrial safety and prevention of occupational hazards in designing solutions to problems Automation
Select and know how to implement control methods in multidisciplinary applications.
Learn how to integrate PLCs, robots, vision equipment and SCADA systems for production automation.
They know how to run and monitor production processes in the plant (MES - Manufacturing Execution System)

Study load

Total learning time: 150h	Hours large group:	15h	10.00%
	Hours medium group:	0h	0.00%
	Hours small group:	45h	30.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

Content

AUTOMATED SYSTEMS INTEGRATION

Learning time: 150h

Theory classes: 15h
Laboratory classes: 45h
Self study : 90h

Description:
Advanced Programming Software Drivers PLC and Scada's
Process simulation techniques
intelligent field instrumentation
Communication techniques between applications (DDE and OPC).
advanced automation systems.
Evaluation and selection of equipment in flexible manufacturing systems.
Industrial systems perception.
Redundancy and security of computer systems automation.
Distributed control systems.
Deterministic systems.

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Bibliography

Basic:

Love, Jonathan. Process Automation Handbook : A Guide to Theory and Practice [on line]. London: Springer London, 2007Available on: <http://dx.doi.org/10.1007/978-1-84628-282-9>. ISBN 9781846282829.

Boy, Guy A. The Handbook of human-machine interaction. CRC Press, 2011. ISBN 9780754675808.

Krutz, Ronald L. Securing SCADA Systems. Wiley, 2005. ISBN 9780764597879.

Bequette, B. Wayne. Process control, modeling, design and simulation. Prentice Hall, 2003. ISBN 9780133536409.

Ollero de Castro, Pedro; Fernández Camacho, Eduardo. Control e instrumentación de procesos químicos. Madrid: Síntesis, DL 1997. ISBN 8477385173.

Others resources:

In a second stage of the course (setember 2017), when the flexible manufacturing cell will need to design and implement an architecture with a network server so that students can work remotely be integrated.

Computer material

Servidor de màquines virtuals

In a second stage of the course (setember 2017), when the flexible manufacturing cell will need to design and implement an architecture with a network server so that students can work remotely be integrated.