270541 - TIA - Informatic Technologies for Automation

Coordinating unit: 270 - FIB - Barcelona School of Informatics
Teaching unit: 707 - ESAII - Department of Automatic Control
Academic year: 2019
Degree: MASTER'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2012). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: Catalan, Spanish

Degree competences to which the subject contributes

Basic:
CB6. Ability to apply the acquired knowledge and capacity for solving problems in new or unknown environments within broader (or multidisciplinary) contexts related to their area of study.

Specific:
CDG1. Capability to integrate technologies, applications, services and systems of Informatics Engineering, in general and in broader and multidisciplinary contexts.
CTE5. Capability to analyze the information needs that arise in an environment and carry out all the stages in the process of building an information system.
CTE8. Capability to design and develop systems, applications and services in embedded and ubiquitous systems.

General:
CG4. Capacity for mathematical modeling, calculation and simulation in technology and engineering companies centers, particularly in research, development and innovation tasks in all areas related to Informatics Engineering.
CG7. Capacity for implementation, direction and management of computer manufacturing processes, with guarantee of safety for people and assets, the final quality of the products and their homologation.

Transversal:
CTR1. ENTREPRENEURSHIP AND INNOVATION: Capacity for knowing and understanding a business organization and the science that rules its activity, capability to understand the labour rules and the relationships between planning, industrial and commercial strategies, quality and profit. Capacity for developing creativity, entrepreneurship and innovation trend.

Teaching methodology

Teaching methodology is described in Activities

Learning objectives of the subject

1. The objective of this subject is for students to familiarise themselves with the intimate and direct relationship that exists between the technology behind automated production processes and information technology. Students will learn concepts and techniques and the skills to be able to:
   - Choose the platforms upon which to execute applications with real time restrictions.
   - Understand the basics of control.
   - Use development tools to simulate, generate and configure applications that can exchange and store information.
   - Program and configure process monitoring systems.
# Study load

<table>
<thead>
<tr>
<th><strong>Total learning time:</strong> 75h</th>
<th>Theory classes: 12h 16.00%</th>
<th>Practical classes: 0h 0.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 12h 16.00%</td>
<td>Guided activities: 3h 4.00%</td>
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<td>Self study: 48h 64.00%</td>
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</tbody>
</table>
### Content

**Introduction to industrial automation**

**Degree competences to which the content contributes:**

**Description:**
Breu introducció als processos productius i com automatitzar

**Requirements of the operating systems for the automation of processes and machines.**

**Degree competences to which the content contributes:**

**Description:**
Sistemes de temps real en entorns industrials

**Programmable automata, types, architectures and programming**

**Degree competences to which the content contributes:**

**Description:**
Introducció als PLC's

**Standard communication servers**

**Degree competences to which the content contributes:**

**Description:**
Standars MODBUS

**Connectivity of SCADA systems with database, other applications and hardware components through 'drivers'**

**Degree competences to which the content contributes:**

**Description:**
Sistemes de monitorització de les operacions de les màquines.

### Qualification system

Not yet translated

### Bibliography