220254 - Advanced Instrumentation

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering
Academic year: 2018
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 2,5
Teaching languages: Spanish

Teaching staff
Coordinator: JAVIER GAGO BARRIO

Degree competences to which the subject contributes

Specific:
1. Capability for modeling, analysis, calculation and design of electrical power systems.
2. Ability to calculate and design electrical machines and actuators, with knowledge of efficient electrical systems and efficient control of electrical drives.
3. Ability to project conventional and non-conventional power facilities.
4. Knowledge to data integration and industrial communications.
5. Knowledge to the management and monitoring of automated information processes energy.
6. Ability to model and solve problems associated with the operation of electric power systems by integrating information technologies and communication: protection, network operation, and electricity market stability.

Learning objectives of the subject

Design, analysis, installation and commissioning of equipment and advanced instrumentation systems

Study load

<table>
<thead>
<tr>
<th>Total learning time: 62h 30m</th>
<th>Hours large group:</th>
<th>15h</th>
<th>24.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours small group:</td>
<td>7h 30m</td>
<td>12.00%</td>
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<tr>
<td></td>
<td>Self study:</td>
<td>40h</td>
<td>64.00%</td>
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</tbody>
</table>
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Content

<table>
<thead>
<tr>
<th><strong>Automatic power measurement</strong></th>
<th><strong>Learning time:</strong> 62h 30m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 15h</td>
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<tr>
<td></td>
<td>Laboratory classes: 7h 30m</td>
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<td>Self study: 40h</td>
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**Description:**
1. Design of a conditioner for measuring electrical power
2. Adquisición with ARDUINO
3. Wireless data transmission
4. LABVIEW acquisition and processing program
5. PLC communication

Qualification system

Exam 25%
Laboratory 50%
Project 25%

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept. If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

Bibliography

**Basic:**

**Complementary:**

**Others resources:**
Hyperlink
http://www.ni.com/labview/esa/