820130 - TCEE - Control Techniques

Degree competences to which the subject contributes

Specific:
1. Understand automatic regulation and control techniques and their application to industrial automation.

Transversal:
4. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

Teaching methodology

The course uses master classes by 30%, individual work by 60%, work in groups (cooperative or not) by 10%.

Learning objectives of the subject

To study the control of feedback systems, while introducing input-output relationships in the electromechanical systems, along with the time-domain response.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 45h</th>
<th>30.00%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Hours small group: 15h</td>
<td>10.00%</td>
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<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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## 820130 - TCEE - Control Techniques

### Content

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Specific Objectives</th>
<th>Learning Time</th>
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</table>
| **(ENG) Item 1: Feedback systems.** | The concepts of feedback systems and transfer function are introduced, along with the use of block diagrams for the representation of systems. | Feedback system concept. Transfer function concept. System representation by block diagrams. | **23h 20m**
  
  Theory classes: 7h  
  Self study: 16h 20m |
| **(ENG) Item 2: Linear systems time domain analysis.** | Time response of first and second order systems is studied, also the case of multiple-input systems. | Time response of first order systems. Time response of second order systems. Multiple-input systems. | **25h 20m**
  
  Theory classes: 7h  
  Laboratory classes: 2h  
  Self study: 16h 20m |
  
  Theory classes: 7h  
  Laboratory classes: 2h  
  Self study: 16h 20m |
The evaluation will be conducted through the assessment by the teacher, with the following weights assigned to evaluated activities:

**Partial exam:** 25%,  **Specific work:** 20%  **Laboratory practice:** 20%  **Final exam:** 35%.

This subject will not have a re-evaluation exam.

### Qualification system

**Bibliography**

#### Basic:


#### Complementary: