280616 - Automatic Regulation and Control

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 707 - ESAII - Department of Automatic Control
Academic year: 2017
Degree: BACHELOR’S DEGREE IN NAUTICAL SCIENCE AND MARITIME TRANSPORT (Syllabus 2010).
ECTS credits: 4,5
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: SERGIO ROMERO LAFUENTE
Others: Romero Lafuente, Sergio

Degree competences to which the subject contributes

Specific:
1. Knowledge, use and application of automation and control methods applicable to the ship and offshore installations.

Teaching methodology

- Receive, understand and synthesize knowledge
- Consider and solve problems
- Analyze results
- Perform work in a team and individually

Learning objectives of the subject

Introduction to the basic concepts and tools of system analysis. Design of controllers to improve the performance specifications of the systems. Presentation of control systems within the naval field. The student must be able to perform the analysis and modification of the systems behavior in navigation technology.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 112h 30m</th>
<th>Hours large group: 15h</th>
<th>13.33%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 15h</td>
<td>13.33%</td>
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<tr>
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<td>Hours small group: 9h</td>
<td>8.00%</td>
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<td></td>
<td>Guided activities: 6h</td>
<td>5.33%</td>
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<td>Self study: 67h 30m</td>
<td>60.00%</td>
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</table>
## Content

### (ENG) Introducció a l'automatització.

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

**Description:**
(ENG) Introductions to automation. Overview of the course. Examples of dynamic systems in a ship.

**Related activities:**
(ENG)

**Specific objectives:**

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### (ENG) Modelització dels sistemes.

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

**Description:**

**Related activities:**
(ENG)

**Specific objectives:**

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### (ENG) Resposta temporal.

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

**Description:**
(ENG) Impulse and step responses of first and second order systems. Permanent errors of closed-loop systems.

**Related activities:**
(ENG)

**Specific objectives:**

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### (ENG) Estabilitat de sistemes.

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

**Description:**

**Related activities:**
(ENG)

**Specific objectives:**
### Degree competences to which the content contributes:

**Description:**
(ENG) Controladors PID. Accions bàsiques de control. Efectes de l'acció dels controls P, I i D. Disseny de controladors PID.

**Related activities:**
(ENG)

**Specific objectives:**
**Qualification system**

The final mark is the partial sum of the following qualifications:

\[ N_{\text{final}} = 0.45 \cdot N_{\text{pf}} + 0.4 \cdot N_{\text{ac}} + 0.15 \cdot N_{\text{el}} \]

- **Nfinal**: Final result
- **Npf**: Final exam qualification
- **Nac**: Continuous evaluation
- **Nel**: Laboratory qualification

The final exam consists of questions on concepts associated with the learning objectives of the course, and a set of practice exercises. Continuous evaluation is the result of a partial test (with a weight of 20% of the final mark) and activities conducted during the year.

Reexamination: According to the rules of the FNB, a reexamination test consisting of a comprehensive review of the subject will be performed. This test reassessment is aimed to students with a final mark ranging between 3.0 and 4.9.

**Regulations for carrying out activities**

- Students who do not submit the final test, or have not done any of the labs, or have not submitted any test of the continuous evaluation will be denoted as "NOT TAKEN".

**Bibliography**

**Basic:**


**Complementary:**


**Others resources:**