340603 - SIAC-R1O07 - Advanced Control Systems

**Coordinating unit:** 340 - EPSEVG - Vilanova i la Geltrú School of Engineering

**Teaching unit:** 707 - ESAII - Department of Automatic Control

**Academic year:** 2016

**Degree:** MASTER'S DEGREE IN AUTOMATIC SYSTEMS AND INDUSTRIAL ELECTRONICS (Syllabus 2012).

(Teaching unit Compulsory)

**ECTS credits:** 5  
**Teaching languages:** Catalan, English

### Teaching staff

**Coordinator:** PAU MARTI COLOM

**Others:** PAU MARTI COLOM

### Opening hours

**Timetable:** To be defined

### Prior skills

In construction

### Degree competences to which the subject contributes

**Specific:**
1. CC01 - Ability to research, design, develop and characterize advanced control systems that enable the dynamic system to behave according to the operational performance requirements.
2. CC02 - Capacity and analyzing the results of the advanced control system integrated into the automated process, formulating alternatives in design or implementation if the controlled system does not reach the required specification.

**Transversal:**
3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.
4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

### Teaching methodology

Combination of theoretical classes, problem based learning and lab classes

### Learning objectives of the subject

Students will be able to analyse, design and implement advanced control systems
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group: 15h</th>
<th>12.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 30h</td>
<td>24.00%</td>
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<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 80h</td>
<td>64.00%</td>
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### Introduction

**Description:**
Introduction

**Related activities:**
In construction

**Specific objectives:**
In construction

**Learning time:** 2h
Theory classes: 2h

### Linear systems

**Description:**
State space models for linear systems

**Related activities:**
In construction

**Specific objectives:**
In construction

**Learning time:** 4h
Theory classes: 4h

### Non-linear systems

**Description:**
Non-linear systems

**Related activities:**
In construction

**Specific objectives:**
In construction

**Learning time:** 4h
Theory classes: 4h
### Advanced techniques for controller design

<table>
<thead>
<tr>
<th>Description:</th>
<th>Advanced techniques for controller design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related activities:</td>
<td>In construction</td>
</tr>
<tr>
<td>Specific objectives:</td>
<td>In construction</td>
</tr>
</tbody>
</table>

**Learning time:** 5h
- Theory classes: 5h
### Planning of activities

<table>
<thead>
<tr>
<th>Systems modeling</th>
<th>Hours: 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>In construction</td>
</tr>
<tr>
<td>Support materials:</td>
<td>In construction</td>
</tr>
<tr>
<td>Descriptions of the assignments due and their relation to the assessment:</td>
<td>In construction</td>
</tr>
<tr>
<td>Specific objectives:</td>
<td>In construction</td>
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</table>

<table>
<thead>
<tr>
<th>Controller design</th>
<th>Hours: 6h</th>
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<tbody>
<tr>
<td>Description:</td>
<td>Controller design</td>
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<tr>
<td>Support materials:</td>
<td>In construction</td>
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<tr>
<td>Descriptions of the assignments due and their relation to the assessment:</td>
<td>In construction</td>
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</table>

<table>
<thead>
<tr>
<th>Control design feasibility</th>
<th>Hours: 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Control design feasibility</td>
</tr>
<tr>
<td>Support materials:</td>
<td>En construcción</td>
</tr>
<tr>
<td>Descriptions of the assignments due and their relation to the assessment:</td>
<td>In construction</td>
</tr>
<tr>
<td>Specific objectives:</td>
<td>In construction</td>
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</table>

<table>
<thead>
<tr>
<th>Controller implementation</th>
<th>Hours: 16h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Controller implementation</td>
</tr>
<tr>
<td>Support materials:</td>
<td>In construction</td>
</tr>
</tbody>
</table>
**340603 - SIAC-R1007 - Advanced Control Systems**

**Descriptions of the assignments due and their relation to the assessment:**
In construction

**Specific objectives:**
In construction

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**Qualification system**

Final mark: 50% Theory + 50% Labs

Theory is evaluated via exams
Labs are as evaluated according to the lab deliveries.

**Regulations for carrying out activities**

Exams are with computer and with class notes

**Bibliography**

**Basic:**


