Course guide
340130 - ENCO-K6007 - Control Engineering

Unit in charge: Vilanova i la Geltrú School of Engineering
Teaching unit: 707 - ESAII - Department of Automatic Control.

Degree:
BACHELOR’S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR’S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan, Spanish, English

LECTURER

Coordinating lecturer: Pau Martí i Colom

Others: Martí Colom, Pau

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTE

Specific:
1. CE25. Knowledge and ability of systems modeling and simulation.
3. CE29. Ability to design automation control systems.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

The subject “Engineering of Control” tries:
- Standardization of knowledge of the students in Control Engineering on the analysis of linear control systems in continuous time as well as discrete time.
- To enable grade students with the capacity of analysing control systems in state-space.
- To enable grade students with the capacity of designing control systems in state-space.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>45.0</td>
<td>30.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>15.0</td>
<td>10.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h
## Analysis of control systems in state-space. Continuous systems

**Description:**
In construction

**Full-or-part-time:** 6h
Theory classes: 1h
Self study : 5h

## Analysis of control systems in state space. Discrete systems

**Description:**
The specific objective of the subject is to redefine the technique of the space of state for sampled systems.

**Contents**
1. - Solution of the homogenous equation
2. - Calculation of the transition matrix.
3. - Solution of the complete equation.

**Activities, knowledge, abilities, aptitudes**
The pupils will have to be able of:
- To formulate the control systems in discreet time by the route of state variables.
- To solve equations of state for systems in discreet time.

**Commentaries**
The development of the subject can be followed through [Dom02].
A theoretical complement, as well as of exercises and examples], [Oga99]

**Full-or-part-time:** 15h
Theory classes: 2h
Laboratory classes: 3h
Self study : 10h

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**title english**

**Description:**
content english

**Full-or-part-time:** 36h
Theory classes: 4h
Laboratory classes: 12h
Self study : 20h

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**title english**

**Description:**
content english

**Full-or-part-time:** 31h
Theory classes: 2h
Laboratory classes: 9h
Self study : 20h
Full-or-part-time: 26h
Theory classes: 2h
Laboratory classes: 9h
Self study: 15h

Full-or-part-time: 36h
Theory classes: 4h
Laboratory classes: 12h
Self study: 20h

GRADING SYSTEM

The qualification of the subject considers all the work carried out throughout the course, assessing both the theoretical and practical aspects.

MARK\_CONTINUOUS\_EVALUATION=0.3*FIRST\_EXAM+0.5*SECOND\_EXAM+0.2*LABORATORY

If the mark of the continuous evaluation is not greater or equal than five, and in accordance to the School regulation, a REEVALUATION exam can be taken whose mark is 100% of the subject.

BIBLIOGRAPHY

Basic: