Course guides
230085 - MATEL - Mathematics for Telecommunications

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 749 - MAT - Department of Mathematics.
Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Compulsory subject).

Academic year: 2020  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Morillo Bosch, Maria Paz
Others: Morillo Bosch, Maria Paz
Sáez, Germán
Gràcia, Xavier

PRIOR SKILLS

Basic Calculus, Linear Algebra

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:
07 AAT N1. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

TEACHING METHODOLOGY

Expository instruction/Master class

LEARNING OBJECTIVES OF THE SUBJECT

The main goal of the subject is the study of the main transforms, the Fourier Series and their applications to solving ordinary differential equations and systems, and some partial differential equations (like the one-dimensional wave equation). The contents of this subject is well connected to the other subjects about linear circuits and signal processing, including as well the basic concepts about differential equations needed in other subjects related to electronics and electromagnetism.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Self study</td>
<td>85,0</td>
<td>56.67</td>
</tr>
<tr>
<td>Hours large group</td>
<td>52,0</td>
<td>34.67</td>
</tr>
<tr>
<td>Hours small group</td>
<td>13,0</td>
<td>8.67</td>
</tr>
</tbody>
</table>

Total learning time: 150 h
## CONTENTS

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th>Full-or-part-time: 12h</th>
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<tr>
<td><strong>Laplace Transform</strong></td>
<td>Definition, convergence. Properties. Transforms of the basic functions. Inversion by partial fractions decomposition. Piecewise defined functions. Convolution. Dirac's delta.</td>
<td>12h Theory classes: 12h</td>
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## GRADING SYSTEM

Short partial exams (40%). Final exam (60%)
BIBLIOGRAPHY

**Basic:**

**Complementary:**