230085 - MATEL - Mathematics for Telecommunications

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 749 - MAT - Department of Mathematics
Academic year: 2019
Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: Villar Santos, Jorge Luis
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>Total learning time: 150h</th>
<th>Hours large group: 65h 43.33%</th>
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<tbody>
<tr>
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<td>Self study: 85h 56.67%</td>
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## Content

<table>
<thead>
<tr>
<th>Laplace Transform</th>
<th><strong>Learning time:</strong> 12h</th>
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<table>
<thead>
<tr>
<th>Introduction to ordinary differential equations</th>
<th><strong>Learning time:</strong> 12h</th>
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<table>
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<tr>
<th>Fourier Series</th>
<th><strong>Learning time:</strong> 16h</th>
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<tr>
<th>Fourier Transform</th>
<th><strong>Learning time:</strong> 12h</th>
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<tr>
<th>z Transform</th>
<th>Learning time: 13h</th>
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<tr>
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<td>Theory classes: 13h</td>
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Description:

Qualification system
Short partial exams (40%). Final exam (60%)

Bibliography

Basic:

Complementary: