230085 - MATEL - Mathematics for Telecommunications

Coordination unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering  
Teaching unit: 749 - MAT - Department of Mathematics  
Academic year: 2018  
Degree: BACHELOR’S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)  
ECTS credits: 6  
Teaching language: Catalan, Spanish

Teaching staff

Coordinator: Villar Santos, Jorge Luis  
Others:  
Morillo Bosch, Maria Paz  
Sáez, Germán  
Gracia, 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:</th>
<th>65h</th>
<th>43.33%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Self study:</td>
<td>85h</td>
<td>56.67%</td>
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## Content

### Laplace Transform

**Learning time:** 12h  
Theory classes: 12h

**Description:**  

### Introduction to ordinary differential equations

**Learning time:** 12h  
Theory classes: 12h

**Description:**  

### Fourier Series

**Learning time:** 16h  
Theory classes: 16h

**Description:**  

### Fourier Transform

**Learning time:** 12h  
Theory classes: 12h

**Description:**  
Short partial exams (40%). Final exam (60%)

Bibliography

Basic:


Complementary: