230816 - BDR - Big Data and R Programmingr

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 749 - MAT - Department of Mathematics
Academic year: 2017
Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Teaching unit Optional)
BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional)
BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)

ECTS credits: 6

Teaching languages: English

Teaching staff
Coordinator: Josep M. Aroca Farrerons
Others: Josep M. Aroca Farrerons

Prior skills
Probability and Statistics

Teaching methodology
Lectures
Application classes
Laboratory classes

Learning objectives of the subject
Programming in R. Data modeling. Big Data methods and examples.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours small group: 52h</th>
<th>34.67%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study: 98h</td>
<td></td>
<td>65.33%</td>
</tr>
</tbody>
</table>
## Content

| **Introduction to R** | **Learning time:** 8h  
Theory classes: 8h  
Laboratory classes: 8h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>The R project. Basic operations. Reading data. Graphics.</td>
</tr>
</tbody>
</table>

| **Data modeling** | **Learning time:** 12h  
Laboratory classes: 12h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Statistics in R. Linear models, regression. Using factors. Visualizing data.</td>
</tr>
</tbody>
</table>

| **Big Data overview** | **Learning time:** 8h  
Laboratory classes: 8h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>A general description of the Big Data paradigm/problems/methods.</td>
</tr>
</tbody>
</table>

| **Big Data methods** | **Learning time:** 10h  
Theory classes: 10h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Predictive analytics, machine learning, data mining.</td>
</tr>
</tbody>
</table>

| **Examples** | **Learning time:** 14h  
Theory classes: 14h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Case example problems</td>
</tr>
</tbody>
</table>

## Qualification system

Laboratory assessments: 100%
Bibliography

Basic:
