310635 - Bigdata for Geoservices

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering
Academic year: 2018
Degree: BACHELOR'S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: Gonzalez Gonzalez, Juan Carlos

Opening hours
Timetable: Tuesday from 6 p.m. to 8 p.m.

Prior skills
Databases

Degree competences to which the subject contributes

Basic:
CB3EGG. The students must have the capacity to gather and interpret relevant data (normally inside the field of study) to emit judgments that include a reflection into relevant social, scientific or ethical contents.
CB2EGG. The students must know how to apply their knowledge to the work or vocation in a professional way and possess the competences that are used to be demonstrated by the elaboration and defense of arguments and the resolution of problems inside their own field of study.

Specific:
CE22EGG. Aptitude and capacity to develop analysis and territorial planning and territorial sustainability to the work with interdisciplinary teams.
CE3EGG. Basic knowledge about the use and programming of computers, operating systems, database and software programmes with application in engineering.
CE11EGG. Design, production and diffusion of the basic cartography; implementation, management and exploitation of Geographic Information Systems (SIG).

General:
CG4EGG. Capacity to take decisions, leadership, management of human resources and direction of interdisciplinary teams related with the special information.
CG6EGG. Reunite and interpret information of the ground and all of this geographic and economically related with the ground.
CG7EGG. Management and execution of investigation projects, development and innovation inside the scope of this engineering.

Transversal:
CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialization and critically assessing the results obtained.
CT5. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.
06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.
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Teaching methodology
Participative expositive classes
Practical classes
Attendance to technical journeys

Learning objectives of the subject
1. Types of databases oriented to Big Data management.
2. Geographical Information Systems and application to Big Data management.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 24h</th>
<th>16.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 36h</td>
<td>24.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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</tbody>
</table>
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## Content

### Big Data & Data Analytics

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 55h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction</td>
<td>Theory classes: 12h</td>
</tr>
<tr>
<td>2. Technology foundations</td>
<td>Practical classes: 18h</td>
</tr>
<tr>
<td>3. Big Data management</td>
<td>Self study: 25h</td>
</tr>
<tr>
<td>4. Analytics &amp; Big Data</td>
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<td>5. Big Data implementation</td>
<td></td>
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<tr>
<td>6. Big Data solutions in the Real World</td>
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**Related activities:**
Activity 1

**Specific objectives:**
1. Key issues dealing with Big Data.
2. Database tipologies for Big Data scenarios.
3. Design of Big Data systems.

### GIS & Big Data

<table>
<thead>
<tr>
<th>Description:</th>
<th>Learning time: 46h 40m</th>
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</thead>
<tbody>
<tr>
<td>1. Geographical Information Systems on the realm of Big Data.</td>
<td>Theory classes: 12h</td>
</tr>
<tr>
<td>2. Hadoop platform for implementing Big Data solutions.</td>
<td>Practical classes: 18h</td>
</tr>
<tr>
<td>3. ArcGIS for Desktop integration with Hadoop</td>
<td>Self study: 16h 40m</td>
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**Related activities:**
Activity 2

**Specific objectives:**
1. Installation and settings of a Big Data open source solution.
2. Integration with a Geographical Information System.

## Qualification system

Two mid-term exams, one theoretical work and another practical work.

## Bibliography

**Basic:**