Course guides
310635 - 310635 - Bigdata for Geoservices

Unit in charge: Barcelona School of Building Construction
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.
Degree: BACHELOR’S DEGREE IN GEOPHYSICS AND GEOMATICS ENGINEERING (Syllabus 2016).
(Compulsory subject).
Academic year: 2020  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Gonzalez Gonzalez, Juan Carlos

Others:

PRIOR SKILLS

Databases

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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 programs with application in engineering.
CE11EGG. Design, production and diffusion of the basic cartography; implementation, management and exploitation of Geographic Information Systems (SIG).

Generical:
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 labor market.

Basic:
CB3EGG. The students must have the capacity to gather and interpret relevant data (normally inside the field of study) to emit judgements that include a reflexion 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.
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>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group</td>
<td>36.0</td>
<td>24.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>24.0</td>
<td>16.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

Big Data & Data Analytics

Description:
1. Introduction
2. Technology foundations
3. Big Data management
4. Analytics & Big Data
5. Big Data implementation
6. Big Data solutions in the Real World

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

Related activities:
Activity 1

Full-or-part-time: 55h
Theory classes: 12h
Practical classes: 18h
Self study: 25h
GIS & Big Data

Description:
2. Hadoop platform for implementing Big Data solutions.
3. ArcGIS for Desktop integration with Hadoop

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

Related activities:
Activity 2

Full-or-part-time: 46h 40m
Theory classes: 12h
Practical classes: 18h
Self study: 16h 40m

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

BIBLIOGRAPHY

Basic: