310644 - Programming for Geoinformation Applications

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 Optional)
ECTS credits: 4,5

Teaching languages: Catalan, Spanish

Coordinator: Gonzalez Gonzalez, Juan Carlos

Opening hours
Timetable: Tuesday from 5 p.m. to 6 p.m.

Degree competences to which the subject contributes

Basic:
CB4EGG. The students must know how to transmit information, ideas, problems and solutions to a specialized but also to a non-specialized public.
CB5EGG. The students have developed these knowledge abilities necessary to undertake later studies with a big grade of autonomy.

Specific:
CE9EGG. (ENG) Coneixement, utilització i aplicació de les tècniques de tractament. Anàlisi de dades espacials. Estudi de models aplicats a l'enginyeria i arquitectura. (Mòdul comú a la branca Topografia)
CE11EGG. Design, production and diffusion of the basic cartography; implementation, management and exploitation of Geographic Information Systems (SIG).

General:
CG6EGG. Reunite and interpret information of the ground and all of this geographic and economically related with the ground.

Transversal:
CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.
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.
CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

Learning objectives of the subject

1. Geoprocessing programming with Python.
2. Web applications and App development with mobile API's.
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 112h 30m</th>
<th>Hours large group: 18h 16.00%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 27h 24.00%</td>
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<td>Hours small group: 0h 0.00%</td>
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<td>Guided activities: 0h 0.00%</td>
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<td>Self study: 67h 30m 60.00%</td>
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### Content

#### Geoprocessing automation

**Learning time:** 41h 15m  
- Theory classes: 20h  
- Self study: 21h 15m

**Description:**  
Design, development and implementation of geoprocessing models with Python.

**Specific objectives:**  
1. Design of geoprocessing models.  
2. Learning Python language.

#### Application programming

**Learning time:** 41h 15m  
- Theory classes: 20h  
- Self study: 21h 15m

**Description:**  
Design and development of Web GIS applications with libraries and mobile Apps with native libraries.

**Specific objectives:**  
1. Programming and HTML5 applications.  
2. Programming with the ESRI Android SDK and AppStudio for ArcGIS.

## Qualification system

Two mid-term exams and two programming activities.

## Bibliography

**Basic:**  