310610 - Observation Adjustment in Geomatics

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 749 - MAT - Department of Mathematics
Academic year: 2018
Degree: BACHELOR'S DEGREE IN GEOPHYSICS AND GEOPHYSICS ENGINEERING (Syllabus 2016).
ECTS credits: 6
Teaching languages: Catalan, English

Teaching staff
Coordinator: Joan J. Rodríguez Jordana

Prior skills
It is essential to have basic knowledge of lineal algebra, infinitesimal calculus in one and various variables, descriptive statistics, probability and random variables.

Degree competences to which the subject contributes

Specific:
1. Knowledge, use and application of instruments and fotogrametric methods and topographic adequated to the realization of non-cartographic raisings.
2. Knowledge and application of methods of minimum adjust quadratic in the scope of topo-geodesic observations, photogrametric and cartographic.

Transversal:
5. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

Learning objectives of the subject

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>Hours small group: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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</tbody>
</table>
## Content

### C1. Inductive Statistics

**Learning time:** 16h  
Theory classes: 3h  
Practical classes: 3h  
Self study: 10h

**Description:**

**Related activities:**

**Specific objectives:**

### C3. Variance-Covariance Matrix

**Learning time:** 16h  
Theory classes: 3h  
Practical classes: 3h  
Self study: 10h

**Description:**

**Related activities:**

**Specific objectives:**

### C3. Indirect Observations. Linear Model

**Learning time:** 27h  
Theory classes: 4h 30m  
Practical classes: 7h 30m  
Self study: 15h

**Description:**

**Related activities:**

**Specific objectives:**
## 310610 - Observation Adjustment in Geomatics

<table>
<thead>
<tr>
<th>C4. Indirect Observations. Non Linear Model</th>
<th>Learning time: 37h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 4h 30m</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 7h 30m</td>
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<tr>
<td></td>
<td>Self study: 25h</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>C5. Robust Methods in Geomatics</th>
<th>Learning time: 27h</th>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 4h 30m</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 7h 30m</td>
</tr>
<tr>
<td></td>
<td>Self study: 15h</td>
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<table>
<thead>
<tr>
<th>C6. Condition Equation Model and General Least Squares Model</th>
<th>Learning time: 27h</th>
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<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 4h 30m</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 7h 30m</td>
</tr>
<tr>
<td></td>
<td>Self study: 15h</td>
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| Related activities:                                       |                      |
|                                                            |                      |
|                                                            |                      |

| Specific objectives:                                      |                      |
|                                                            |                      |
### Planning of activities

| Coursework | **Hours**: 8h  
Theory classes: 4h  
Self study: 4h |
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<tbody>
<tr>
<td><strong>Description</strong>:</td>
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<tr>
<td>Descriptions of the assignments due and their relation to the assessment:</td>
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<tr>
<td><strong>Specific objectives</strong>:</td>
<td></td>
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</tbody>
</table>

**[ENG] COMPETÈNCIA GENÈRICA EN LLENGUA ANGLESA**

| Activity L1 | **Hours**: 2h  
Theory classes: 2h |
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<td><strong>Description</strong>:</td>
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<tr>
<td>Descriptions of the assignments due and their relation to the assessment:</td>
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| Activity L2 | **Hours**: 2h  
Theory classes: 2h |
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<tbody>
<tr>
<td><strong>Description</strong>:</td>
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| Activity L4 | **Hours**: 2h  
Theory classes: 2h |
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<tbody>
<tr>
<td><strong>Description</strong>:</td>
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</tr>
<tr>
<td><strong>Support materials</strong>:</td>
<td></td>
</tr>
<tr>
<td><strong>Specific objectives</strong>:</td>
<td></td>
</tr>
</tbody>
</table>

| Activity L3 | **Hours**: 2h  
Theory classes: 2h |
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<tbody>
<tr>
<td><strong>Description</strong>:</td>
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<tr>
<td><strong>Support materials</strong>:</td>
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<tr>
<td><strong>Specific objectives</strong>:</td>
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</table>
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## Description:

<table>
<thead>
<tr>
<th>Activities T1 and T2</th>
<th>Hours: 1h</th>
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<tr>
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<td>Theory classes: 1h</td>
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<table>
<thead>
<tr>
<th>Activities Q1 and Q2</th>
<th>Hours: 5h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 5h</td>
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</table>

## Qualification system
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Bibliography

Basic:


Complementary:


Others resources:

The course has a space in the virtual campus ATENEA where you can find
A link to the teaching guide
A PDF document where you can follow the activities while being developed
A repository of practices to resolve

Audiovisual material

Nom recurs

Resource