310609 - Electromagnetism and Optics

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 748 - FIS - Department of Physics
Academic year: 2019
Degree: BACHELOR'S DEGREE IN GEOINFORMATION AND GEOMATICS ENGINEERING (Syllabus 2016).
(Teaching unit Compulsory)
ECTS credits: 6

Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: CARLOTA E. AUGUET SANGRÀ
Others: BLAS ECHEBARRIA DOMÍNGUEZ

Prior skills
Trigonometry
Elementary algebra.
Vectorial calculus.
Differential and integral calculus.
Mechanics.

Degree competences to which the subject contributes

Specific:
1. Comprehension and domination of the basic concepts about the general laws of mechanics, thermodynamics, fields, waves and electromagnetism and its application for the resolution of engineering's own problems.

Transversal:
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.
3. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
4. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

Learning objectives of the subject

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Trigonometry
Elementary algebra.
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### 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>
</tr>
<tr>
<td>Content</td>
<td>Learning time</td>
<td>Theory classes</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>(ENG) C1 Camps elèctric i magnètic</td>
<td>46h</td>
<td>12h</td>
</tr>
<tr>
<td>(ENG) C2 Oscil·lacions i ones</td>
<td>35h 30m</td>
<td>6h</td>
</tr>
<tr>
<td>(ENG) C3 Llum i radiació</td>
<td>12h</td>
<td>2h</td>
</tr>
<tr>
<td>(ENG) C4 Fotometria i colorimetria</td>
<td>15h</td>
<td>2h</td>
</tr>
<tr>
<td>(ENG) C5 Òptica Geomètrica</td>
<td>38h 30m</td>
<td>8h</td>
</tr>
</tbody>
</table>
# Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Theory classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE1 first test (25%)</td>
<td>2h</td>
<td>2h</td>
</tr>
<tr>
<td>PE2 Second Test (25%)</td>
<td>2h</td>
<td>2h</td>
</tr>
<tr>
<td>ExFin Final Exam (50%)</td>
<td>3h</td>
<td>3h</td>
</tr>
</tbody>
</table>
There will be two practices (PE1 and PE2) and a final exam (ExFin).

The first practice PE1 includes the first half part of the matter. The weight of the practice is a 25% of the final grade. This exercise will be done at the partial exams term.
The second practice PE2 includes the second half part of the matter. The weight of the practice is a 25% of the final grade. This exercise will be done at the end of the period.
The final exam ExFin includes all the contents. The weight of this exam is a 50% of the final grade.

According to Normativa Académica de Estudios de Grado y Máster de la UPC and EPSEB, the final evaluation of the subject will be done as it is described.

The final grade of the subject will be the larger between these two grades:

a) \( m \): Arithmetic mean of the pertinent marks of PE1, PE2 and ExFin.

\[
m = 0.25p + 0.25s + 0.5f
\]
where
\( p \) = PE1 practice mark.
\( s \) = PE2 practice mark.
\( f \) = ExFin final exam mark.

b) \( f \): Final exam mark.

Reappraisal

The student who has failed the subject with a numerical mark between 3.5 and 4.9 will have the opportunity to do an unique reappraisal exam, which will include all the contents of the subject and will be done in a settled term. If the student pass the exam, his final mark of the subject will be 5.0.
The student won't be able to do this reappraisal exam if:
i) The student has already passed the subject.
ii) The student's final mark is less than 3.5 (including NP).

Bibliography

Basic: