340027 - FIS2-N2O21 - Physics II

Coordinating unit: 340 - EPSEVG - Vilanova i la Geltrú School of Engineering
Teaching unit: 748 - FIS - Department of Physics
Academic year: 2017
Degree: BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Degree competences to which the subject contributes

Specific:
1. CE2. Comprehension and containment of basic concepts concerning general rules of mechanic, thermodynamic, field of shafts and electromagnetism; and its diligence to solve engineering problems.

Transversal:
3. 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.
4. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
5. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
6. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.
Learning objectives of the subject

Teaching methodology

- In the theory classes, the theoretical fundamentals of the scheduled matters shall be explained and developed and some typical problems shall be solved. They will consist of theory explanations complemented with activities intended for stimulating the students' participation, discussion and critical analysis.

- In the practical classes (problem solving), problems about the matters dealt with shall be presented and solved. Students, individually or in groups, have to solve the established problems. At the due time, the solving of problems or other activities to be graded will be proposed. To reach a positive mark, these activities have to be carried out or delivered within the time scheduled.

- In the laboratory classes, students have to carry out the corresponding laboratory activities and simulations. They have to deliver the resulting laboratory report with the calculations and comments asked. At the beginning of each laboratory session, each student has to deliver a previous study or questionnaire (accessible at ATENEA) about the activity to be carried out. Within the laboratory category, some activities to be carried out outside the laboratory may be proposed (reports, simulations, bibliographic research, etc.).

Study load

<table>
<thead>
<tr>
<th>Study load</th>
<th>Hours large group:</th>
<th>52h 30m</th>
<th>35.00%</th>
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<tbody>
<tr>
<td>Total learning time:</td>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Hours small group:</td>
<td>7h 30m</td>
<td>5.00%</td>
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<td></td>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
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<tr>
<td>Content</td>
<td>Learning time:</td>
<td>Theory classes:</td>
<td>Practical classes:</td>
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<tr>
<td><strong>C1. Electric fields and potential energies</strong></td>
<td>33h</td>
<td>6h</td>
<td>8h</td>
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<tr>
<td><strong>C2. Conductors and dielectrics. Capacity and capacitors. Electricity</strong></td>
<td>36h</td>
<td>6h</td>
<td>8h</td>
</tr>
<tr>
<td><strong>C3. Magnetism. Electromagnetic induction</strong></td>
<td>40h</td>
<td>6h</td>
<td>8h</td>
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<tr>
<td><strong>C4. Electromagnetic waves - Optics</strong></td>
<td>30h 30m</td>
<td>6h</td>
<td>4h 30m</td>
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<tr>
<td><strong>C5. Written tests. Simulationscrites. Simulació</strong></td>
<td>10h 30m</td>
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The mark will be the higher of both following results:

\[
QF_1 = 15\% AC + 15\% PL + 35\% EP + 35\% EF \\
QF_2 = 15\% AC + 15\% PL + 70\% EF
\]

where the maximum value of every partial mark is 10. The partial marks are:

- **AC** = mark for activities (problem solving, simulations, etc.) carried out along the course.
- **PL** = mark for laboratory activities.
- **EP** = mark for a first partial exam approximately at the middle of the semester.
- **EF** = mark for a final exam.

Only this exam will be a re-evaluable test, with the established weighing of 70%.

Regulations for carrying out activities

Each exam will have two parts: a multi-choice questionnaire of theory questions and brief problems (up to 30% of the exam mark) and some problems to solve (up to completing 100%). To solve the problems, students may use a list of formulas as well as any additional material which the responsible lecturers will establish and announce sufficiently in advance. Only the final exam will be a re-evaluable test, with the established weighing of 70%.

As for the laboratory activities, the previous study or questionnaire as well as the activity report delivered at the end of the laboratory sessions will be graded. These laboratory activities will have 1.5 points over 10 in the final course mark. During the course, a series of activities will be established which students have to carry out individually or in groups, within the class session or outside it, as well as any other simulation tasks. The maximum mark for these activities will be 1.5 points over 10 in the final course mark.
Bibliography

Basic:


Complementary:


Others resources:

Hyperlink

Curso Interactivo de física en internet  http://www.sc.ehu.es/sbweb/physica

Simulacions de física per ordinador d'accés lliure