220007 - Calculus II

Degree competences to which the subject contributes

Specific:
1. The ability to solve mathematical problems that may arise in an engineering context. The ability to apply knowledge of linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical methods; numerical algorithms; statistics and optimisation

General:
2. THE ABILITY TO ANALYSE AND SYNTHESISE: The ability to think abstractly about the fundamental concepts of a text or exposition and to intelligibly present the result of one's work.

Teaching methodology

- Attendance theory lessons.
- Attendance exercises lessons.
- Autonomous work.

In theory lessons there will be introduced the basic concepts and results of each topic, as well as examples and practical instances
In practical lessons the students are due to solve exercises and problems that would help them to understand the theory concepts.
On the other hand, the students are due to solve a collection of problem, both during lessons and autonomous work. Along the course, a tracing of the learning of the student will be made. As a reference, there will be a solved problem collection available. Teachers will set doubts hours.

Learning objectives of the subject

Provide the basic concepts of differential and integral calculus in several variables. Introduce the concept of parameterization of a curve and a surface. Introduce the vector calculus and its more relevant applications.
# Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 32h</th>
<th>21.33%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 28h</td>
<td>18.67%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
# 220007 - Calculus II

## Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Learning time</th>
<th>Description</th>
<th>Related activities</th>
</tr>
</thead>
</table>
| 1. Curves.                                          | 21h 02m       | Theory classes: 4h 27m  
Practical classes: 3h 44m  
Self study: 12h 51m |                    |
| 2. Introduction to several variables functions.     | 14h 58m       | Theory classes: 2h 40m  
Practical classes: 3h 44m  
Self study: 8h 34m |                    |
| 3. Differential calculus.                           | 39h 02m       | Theory classes: 8h  
Practical classes: 7h 28m  
Self study: 23h 34m |                    |
| 4. Integral calculus.                               | 33h 15m       | Theory classes: 6h 13m  
Practical classes: 5h 36m  
Self study: 21h 26m |                    |
### Qualification system

<table>
<thead>
<tr>
<th>Continuous evaluation</th>
<th>Midterm exam</th>
<th>Final exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>25%</td>
<td>50%</td>
</tr>
</tbody>
</table>

### Regulations for carrying out activities

The final and midterm exams are individually developed. The teacher may ask the students to identify themselves.

### Bibliography

**Basic:**


**Complementary:**


**Others resources:**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Title</th>
<th>Author(s)</th>
<th>Publisher</th>
<th>ISBN</th>
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</thead>
<tbody>
<tr>
<td>Marsden</td>
<td>Cálculo vectorial</td>
<td>Jerrold E.</td>
<td>Addison Wesley</td>
<td>8478290699</td>
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<tr>
<td>Rahman</td>
<td>Applied vector analysis</td>
<td>Matiur</td>
<td>CRC Press</td>
<td>9781420051704</td>
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<tr>
<td>Leseduarte Milán</td>
<td>Cálcul infinitesimal II: exercicis i problemes</td>
<td>Ma. Carme [et al.]</td>
<td>ETSEIAT</td>
<td>9788469250006</td>
</tr>
<tr>
<td>Salas</td>
<td>Calculus: una y varias variables</td>
<td>Saturnino L [et al.]</td>
<td>Reverté</td>
<td>9788429151589</td>
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<tr>
<td>Marsden</td>
<td>Cálculo vectorial: problemas resueltos</td>
<td>Jerrold E [et al.]</td>
<td>Addison-Wesley Iberoamericana</td>
<td>0201625644</td>
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<tr>
<td>Fàbrega</td>
<td>Exàmens de càlcul resolts</td>
<td>Albert [et al.]</td>
<td>Cardellach Còpies</td>
<td>848497877X</td>
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