Degree competences to which the subject contributes

Basic:
CB1. That students have demonstrated to possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply Knowledge from the vanguard of their field of study.

Specific:
CE1. Skillfully use mathematical concepts and methods that underlie the problems of science and data engineering.

General:
CG2. Choose and apply the most appropriate methods and techniques to a problem defined by data that represents a challenge for its volume, speed, variety or heterogeneity, including computer, mathematical, statistical and signal processing methods.

Transversal:
CT5. Solvent use of information resources. Manage the acquisition, structuring, analysis and visualization of data and information in the field of specialty and critically evaluate the results of such management.
CT6. Autonomous Learning. Detect deficiencies in one's own knowledge and overcome them through critical reflection and the choice of the best action to extend this knowledge.

Teaching methodology

Lectures introduce the concepts, results and algorithms needed to achieve the required level of understanding.

These concepts are put into practice ex problem and laboratory sessions.

The teacher poses problems related to the current topic prior to each problem session.

Learning objectives of the subject

1. Grasp the concept of real i complex number
2. Ability to cope with interval calculus and inequalities
3. Modeling of problems of numerical optimization
## Study load

<table>
<thead>
<tr>
<th></th>
<th>Hours large group:</th>
<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total learning time:</strong></td>
<td>45h</td>
<td>30h</td>
<td>0h</td>
<td>112h 30m</td>
</tr>
<tr>
<td></td>
<td>24.00%</td>
<td>16.00%</td>
<td>0.00%</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
## Content

### Numbers

**Degree competences to which the content contributes:**

**Description:**

### Functions

**Degree competences to which the content contributes:**

**Description:**
Qualitative study of the most common functions and their inverses. Limits and continuity.

### Derivation

**Degree competences to which the content contributes:**

**Description:**

### Integration

**Degree competences to which the content contributes:**

**Description:**

### Sequences and series

**Degree competences to which the content contributes:**

**Description:**
## Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Specific objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Midterm exam</strong></td>
<td>7h</td>
<td>1, 2</td>
</tr>
<tr>
<td><strong>Final exam</strong></td>
<td>12h 30m</td>
<td>2, 3</td>
</tr>
</tbody>
</table>
| **Developing the first topic** | 33h | Theory classes: 9h  
Practical classes: 6h  
Laboratory classes: 0h  
Guided activities: 0h  
Self study: 18h |
| **Developing the second topic** | 33h | Theory classes: 9h  
Practical classes: 6h  
Laboratory classes: 0h  
Guided activities: 0h  
Self study: 18h |
| **Developing the third topic** | 33h | Theory classes: 9h  
Practical classes: 6h  
Laboratory classes: 0h  
Guided activities: 0h  
Self study: 18h |
| **Developing the fourth topic** | 33h | Theory classes: 9h  
Practical classes: 6h  
Laboratory classes: 0h  
Guided activities: 0h  
Self study: 18h |
Developing the fifth topic

<table>
<thead>
<tr>
<th>Hours:</th>
<th>33h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes:</td>
<td>9h</td>
</tr>
<tr>
<td>Practical classes:</td>
<td>6h</td>
</tr>
<tr>
<td>Laboratory classes:</td>
<td>0h</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>0h</td>
</tr>
<tr>
<td>Self study:</td>
<td>18h</td>
</tr>
</tbody>
</table>

Qualification system

The maximum of the weighted average of the midterm (40%) and the final exam (60%) and the final exam.

In case of reevaluation, the new grade will replace the previous.

Bibliography

Basic:


Complementary:

Thompson, Silvanus Phillips; Gardner, Martin. Calculus made easy : being a very-simplest introduction to those beautiful methods of reckoning which are generally called by the terrifying names of the differential calculus and the integral calculus. 2nd ed. Macmillan and co., limited, 1998. ISBN 9781514779545.