Degree competences to which the subject contributes

Specific:
1. Ability to solve math problems that may arise in engineering. Ability to apply knowledge about: linear algebra, geometry, differential geometry to, differential and integral calculus, differential equations and partial differential, numerical methods, algorithmic numerical and statistical optimization.

Teaching methodology

(ENG) Receive, understand and summarize knowledge.
Posing and solving problems.
Developing arguments from a critical point of view and defending them.
Doing work in group and individually.

Learning objectives of the subject

- To be able to apply the knowledge on basic functions, differential and integral calculus, numerical methods and statistics.
- To solve the mathematical problems that arise in engineering.
- To develop the capacity of abstraction while solving problems.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>30h</th>
<th>20.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>30h</td>
<td>20.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
# 280605 - Fundamentals of Mathematics II

## Content

| **Functions.** | **Learning time:** 20h  
| | Theory classes: 8h  
| | Self study: 12h |

### Description:
(ENG) Functional relations, properties and operations. Elementary functions: polynomials, rationals, exponentials, logarithm and trigonometric functions. Inverse functions. Functions in 1 i 2 variables, curves and surfaces.

### Related activities:
(ENG)

### Specific objectives:
(ENG)

| **Derivation.** | **Learning time:** 35h  
| | Theory classes: 14h  
| | Self study: 21h |

### Description:

### Related activities:
(ENG)

### Specific objectives:
(ENG)

| **Integration.** | **Learning time:** 25h  
| | Theory classes: 10h  
| | Self study: 15h |

### Description:

### Related activities:
(ENG)

### Specific objectives:
(ENG)
### (ENG) Series of functions.

**Description:**

**Related activities:**
(ENG)

**Specific objectives:**
(ENG)

**Learning time:** 20h
- Theory classes: 8h
- Self study: 12h

### (ENG) Ordinary Differential equations.

**Description:**

**Related activities:**
(ENG)

**Specific objectives:**
(ENG)

**Learning time:** 15h
- Theory classes: 6h
- Self study: 9h

### (ENG) Numerical Methods.

**Description:**

**Related activities:**
(ENG)

**Specific objectives:**
(ENG)

**Learning time:** 15h
- Theory classes: 6h
- Self study: 9h
The final grade is the sum of the following partial grades:

\[ N_{\text{final}} = 0.60 \ N_{\text{pf}} + 0.40 \ N_{\text{ac}} \]

where
- \( N_{\text{final}} \): final grade.
- \( N_{\text{pf}} \): grade of the final test.
- \( N_{\text{ac}} \): continuous grade.

The final test consists of some theoretical questions about concepts related to the course's learning aims, and a set of problems that require the application of the methods studied. Its duration is 3 hours.

The continuous grade consists of one or two tests (each one hour long), and the supervised activities (4 hours) carried out during the semester.

**Regulations for carrying out activities**

If some of the activities of the continuous grade are missed, the continuous grade is 0.

A student who does not make the final test or the test for the continuous grade is being considered as 'No Presentat'.
Bibliography

Basic:


Complementary:


