

29600 - Mathematics I

Información del Plan Docente

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| Academic Year | 2016/17 |
| Academic center | 110 - Escuela de Ingeniería y Arquitectura |
| Degree | 430 - Bachelor's Degree in Electrical Engineering |
| ECTS | 6.0 |
| Course | 1 |
| Period | Half-yearly |
| Subject Type | Basic Education |
| Module | --- |

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process is based on the following:

Master classes (theory and problems) (42 hours)
Practical sessions of computer (12 hours)
Tutorials and exhibition of works in group (6 hours)
Preparation of works in group (14 hours)

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Personal study of the student (73)

Realization of examinations and tests (3 hours)

To achieve that the students know the concepts of the course they will be needed theoretical lectures, practical sessions and group works.

The auxiliary material for the course is available in the ADD.

5.2.Learning activities

Classroom

They will be 3 hours a week into the classroom to complete a total of 42 hours. In these classes will be developed the theoretical contents and illustrative examples.

The contents of the course are divided into two main blocks: differential and integral calculus in one and several variables.

Practices with computer

They will be 6 practice sessions with computer 2 hours each. A mathematical software will be used to resolve them. The chosen software will allow the student work with calculation symbolic, numeric and graphic.

Students will have in advance a manual for each session that will contain the objectives, the theoretical contents and an explanation of the mathematical software commands used to solve the proposed problems.

Works in group

Several works must be made in groups of 3 or 4 people and will be guided with interviews/seminars with Professor.

5.3.Program

1. **Differential calculus in one variable:**
 1. Real and complex numbers.

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2. Differentiable functions.
3. Polynomial approximation.
4. Numerical methods.
2. **Integral calculus in one variable :**
 1. Techniques of integration.
 2. The definite integral.
 3. Applications of the integral.
 4. Numerical integration.
3. **Differential calculus in several variable :**
 1. Scalar and vector fields.
 2. The gradient vector.
 3. Tangent planes and linear approximation.
 4. Maximum and minimum of two variables functions.
4. **Multiple integrals:**
 1. Double integrals.
 2. Line integrals

5.4.Planning and scheduling

The presentation of works in group will be always before the start of the first semester exams. The dates of the meetings with the Professor will be detailed in class. This information will be available on ADD of the course.

The planning of the practical sessions with computer will be published at beginning of course.

5.5.Bibliography and recommended resources

Bibliography can be found in <http://psfunizar7.unizar.es/br13/eGrados.php?id=220>