

## 29710 - Mathematics III

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	110 - Escuela de Ingeniería y Arquitectura
<b>Degree</b>	434 - Bachelor's Degree in Mechanical Engineering 330 - Complementos de formación Máster/Doctorado
<b>ECTS</b>	6.0
<b>Course</b>	---
<b>Period</b>	Indeterminate
<b>Subject Type</b>	Basic Education, ENG/Complementos de Formación
<b>Module</b>	---

### **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**

#### **5.2.Learning activities**

#### **5.3.Program**

The contents of the course can be divided into two sections: Ordinary Differential Equations (ODEs) and Partial Differential Equations (PDEs).

## 29710 - Mathematics III

### Section 1: Ordinary Differential Equations (ODEs)

- First-order differential equations: Existence and uniqueness of solutions. Basic methods of integration. Applications.
- Linear differential equations of higher order: Equations with constant coefficients. The Cauchy-Euler equation. Applications.
- Linear differential systems: First order differential systems with constant coefficients. Applications.
- Numerical solution of ODEs systems: Runge-Kutta methods. Applications.

### Section 2: Partial Differential Equations (PDEs)

- Sturm-Liouville problems and Fourier Series.
- The separation of variables method for solving second-order PDEs.
- Numerical solution of boundary value problems of PDEs.

### 5.4.Planning and scheduling

### 5.5.Bibliography and recommended resources