- Course title: **Mathematics II**.
- Course code: 5268
- Type of course: compulsory
- Level of course: basic
- Year of study: 1
- Semester: 2
- Number of credits allocated: 6
- Names of lecturers: Tomás Pérez and Luis Antonio Sarabia
- Objective of the course:
    - To learn to apply scientific reasoning correctly
    - To interpret a chemical process from the properties of the (mathematical) functions by which it is satisfactorily modelled (linear and dynamic models). To characterize the uncertainty of experimental data through statistical models
- Prerequisites: no prior requirements.
- Course contents:
    - Dynamic models: differential equations, system dynamics, kinetics, balances, chemical reactions.
    - Linear models and linearization: linearity, matrices and linear systems, eigenvectors and eigenvalues, matrix diagonalization.
    - Stochastic models: descriptive statistics, probabilistic models, estimation and test of hypothesis, analysis of variance (ANOVA), trueness and precision, univariate regression.
- Recommended reading:
    - Álgebra lineal y sus aplicaciones, D.C. Lay, Addison Wesley Longman: Prentice Hall, México, 1999.
    - Comprehensive Chemometrics, Ed. S. Brown, R. Tauler, B. Walczak Chapter 1.02: Quality of Analytical Measurements: Statistical Methods for Internal Validation, M.C. Ortiz, L.A. Sarabia, M.S. Sánchez, A. Herrero and Chapter 1.05 : Quality of Analytical Measurements: Univariate Regression, M.C. Ortiz, M.S. Sánchez, L.A. Sarabia,, Elsevier, Amsterdam, 2009.
    - Differential equations with MAPLE V, M.L. Abell and J.P. Braselton, Academic Press, 2000
    - Estadística: Modelos y métodos. 1 Fundamentos, D. Peña, Alianza Universidad Textos, Madrid, 1993.
    - Elementary differential equations and Boundary value problems, Boyce, DiPrima, John Wiley and Sons, Inc., 2001.
    - Probability and Statistics: The Science of Uncertainty, Michael J. Evans and Jeffrey S. Rosenthal, WH Freeman, 2003.
- Teaching methods:
    - Lectures: teachers explain the contents of the lessons.
    - Seminars: students and teacher discuss the problems and other points raised in class.
    - Practicals: students apply their knowledge to solve laboratory experiments.
- Assessment methods:
    - Continuous evaluation of theoretical-practical sessions: 30%
    - Group and individual analysis, presentation and discussion of practices and problems: 10%
    - Written work and exams: 60%.
- Language of instruction: Spanish and/or English