- Course title: **Organic Chemistry III: Organic Synthesis**
- Course code: 5282
- Type of course: compulsory
- Level of course: fundamental
- Year of study: 3
- Semester: 1
- Number of credits allocated: 6
- Names of lecturers: José Luis de la Peña and Tomás Torroba.
- Objective of the course: upon completion of the course, students will be able to: select specific reactions for specific carbon-carbon bond formations, for the introduction or interconversion of specific functional groups present in a target structure; design synthetic pathways for the synthesis of a specific compound from simple organic materials; analyze the synthetic pathway of complex molecules obtained from the literature or from the student's proposals.
- Prerequisites: It is recommended that students should have attended Organic Chemistry I and II before following this course.
- Course contents: oxidation and reduction reactions; chemoselectivity and stereochemistry; pericyclic reactions; rhe Diels-Alder and 1,3-dipolar cycloaddition reactions; protecting groups and equivalent synthetic groups; catalyzed organic reactions; transition metal organometallic compounds in organic synthesis; introduction to organic synthesis; design of organic synthesis; the retrosynthetic methodology; synthesis of aromatic heterocycles; synthesis of natural products.
- Recommended reading:
  - Francis A. Carey and Richard J. Sundberg, (2007) Advanced Organic Chemistry, Part. A: Structure and Mechanisms, Part. B: Reactions and Synthesis, 5th Ed., Springer, New York, USA, 978-0-387-44897-8
  - Reinhard Brückner, (2002) Advanced Organic Chemistry, 1st Ed., Academic Press, San Diego, California, 0-12-138110-2
  - Francesco Fringuelli, Aldo Taticchi, (2002) The Diels-Alder Reaction: Selected Practical Methods, 1st Ed., John Wiley and Sons, New York, 0-471-80343-X
  - Guo-Qiang Lin, Yue-Ming Li, Albert S.C. Chan, (2001) Principles and Applications of Asymmetric Synthesis, 1st Ed., John Wiley & Sons, New York, 0-471-40027-0
  - Paul Wyatt, Stuart Warren, (2007) Organic Synthesis: Strategy and Control, 1st Ed., John Wiley and Sons, Chichester, UK, 978-0-471-48940-5
  - Theophil Eicher, Siegfried Hauptmann, (2003) The Chemistry of Heterocycles, Primera, Wiley-VCH, New York, 3-527-30720-6
- Teaching methods:
  - Lectures: teachers explain the contents of the lessons.
  - Seminars: students and teacher discuss the problems and other points raised in class.
- Assessment methods:
  - Resolution of problems, issues and other proposals: 30%
  - Participation and attitude in lectures and seminars: 10%
  - Written work and exams: 60%
- Language of instruction: Spanish and/or English