27209 - Organic Chemistry I

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	9.0
Year	2
Semester	Annual
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It favors the understanding of the different organic chemical processes. A wide range of teaching and learning tasks are implemented, such as theory sessions, assignments, and tutorials.

Students are expected to participate actively in the class throughout the course.

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Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

5.2.Learning tasks

The course includes 9 ECTS organized according to theory and practical sessions (9 ECTS): 60 theory + 30 problems hours.

Theory sessions: lecture notes and a series of problems (and its solutions) will be available for the students. At the end of each topic, some of the problems will be solved in class by the professor.

5.3.Syllabus

The course will address the following topics:

1. Properties and reactivity of alkanes and cycloalkanes: Free-radical halogenation.

2. Properties and reactivity of alkenes and alkynes: electrophilic addition reactions. Polymerization of alkenes.

3. Reactivity of pi-delocalized systems: allyl derivatives. Conjugated polyenes: Diels-Alder reaction.

4. Properties and reactions of haloalkanes: Reactions of nucleophilic substitution and elimination. Organometallic reagents. Introduction to the retrosynthetic analysis.

5. Properties and reactivity of alcohols, ethers, epoxides and thioethers: Oxidations. Nucleophilic substitutions and eliminations, rearrangements of carbocations, epoxide-opening reactions.

6. Properties and reactivity of amines and other nitrogen-derivatives: ammonium salts, diazonium salts, azo compounds.

7. Benzene and other aromatic compounds: electrophilic aromatic substitution.

8. Arenes, aryl halides, phenols and anilines: Influence of the benzene ring in the reactivity of the substituents. Aromatic nucleophilic substitution.

9. Properties and reactivity of aldehydes and ketones: nucleophilic addition.

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10. Properties and reactivity of carboxylic acids and their derivatives: nucleophilic acyl substitution.

5.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Facultad de Ciencias" website (http://ciencias.unizar.es/perfil-exchange-students).

5.5.Bibliography and recommended resources

BB	Vollhardt, K. Peter C.. Química orgánica : estructura y función / K. Peter C. Vollhardt, Neil E. Schore ; traducción y coordinación, David Andreu Martínez . 5ª ed. Barcelona : Omega, D.L. 2007 [y ediciones posteriores]
BB	Wade, Leroy Grover, Jr.. Química orgánica / L. G. Wade, Jr. ; traducción y revisión del texto por Ángel Manuel Montaña Pedrero, Consuelo Batalla García . 5ª ed. Madrid [etc.]: Pearson/Prentice Hall, D.L. 2004 [y ediciones posteriores]
BC	García Calvo Flores, Francisco. Problemas resueltos de química orgánica / Francisco García Calvo-Flores, José A. Dobado Jiménez Madrid : Thomson, 2007
BC	Quiñoá Cabana, Emilio. Cuestiones y ejercicios de química orgánica : una guía de estudio y autoevaluación / Emilio Quiñoá Cabana, Ricardo Riguera Vega . - 2ª ed. Madrid [etc.] : McGraw-Hill, D.L. 2004