

27235 - Organic Chemistry Insights

Información del Plan Docente

Academic Year	2018/19
Subject	27235 - Organic Chemistry Insights
Faculty / School	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	5.0
Year	4
Semester	Second semester
Subject Type	Optional
Module	---

1. General information

1.1. Aims of the course

The subject and their expected results respond to the following statements and objectives:

- * Explore the interrelation between structure, properties and reactivity of organic compounds.
- * Educate the student in synthetic strategies of interest for the design and preparation of compounds and materials organic.
- * Establish methods to analyze an organic reaction mechanism.
- * Manage primary and secondary sources of utility in organic chemistry.

1.2. Context and importance of this course in the degree

The course delves into the more advanced concepts of organic chemistry. Its contents complete those acquired in the organic chemistry I and organic chemistry II exams in order to give a complete and specialized education in organic chemistry education.

It is complementary with other optional exams such as Chemistry Organometallic (27234), Homogeneous Catalysis (27232) and Industrial organic chemistry (27237)

1.3. Recommendations to take this course

It is recommended to have passed the following subjects of organic chemistry I and organic chemistry II.

Knowledge to perform bibliographic searches through the main accessible tools at the Faculty (SciFinder, ACS, ScienceDirect, etc.), is highly recommended as well as to have followed one of the courses offered by the library of the

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Faculty of Sciences.

2. Learning goals

2.1. Competences

To overcome the course, the student will be more competent to...

Acquire precise knowledge of the concepts and fundamentals of organic chemistry. Use with precision and property-specific vocabulary and terminology.

Express themselves orally and in writing in a clear and precise way. Connect the organic chemistry with other areas and disciplines.

Learn about and handle concepts such as: synthetic equivalent, protecting groups, investment of polarity and in general the problem of selectivity in a reaction in organic chemistry.

olve problems and questions proposed, as well as defend the results critically.

Properly handle all kinds of bibliography (primary and secondary sources, electronic searches, etc.).

Generate possible ideas and options for action before the organic chemistry-related problems.

2.2. Learning goals

The student, to overcome this subject, shall demonstrate the following results...

It handles all general concepts, previously studied, on stereochemistry and reactivity of organic functions, using specific vocabulary and terminology accurately and property.

It determines relationships of isomerism between organic molecules, establishing relationships of topicidad between atoms and functional groups.

Meet new reactions of synthetic interest.

It is designed for moderately complex organic synthesis using a retrosynthetic analysis. Proposed reaction mechanism based on the proposed intermediate.

Difference different types of organic reactions in view of reagents and products. Sets the most suitable protective groups for the most important functional groups. It comprises and establishes methods to predict the selectivity in stereoselective reactions.

He understands the principle of Catalysis and its application to metal Catalysis and organocatalysis.

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2.3.Importance of learning goals

The course learning outcomes are fundamental to acquire adequate specialization in organic chemistry that allows to address complex problems directly related to the design of synthetic routes of products of a certain complexity and the elucidation of reaction mechanisms. Also, they will provide the knowledge necessary for efficient catalytic systems in organic reactions and will offer the possibility of complementing the knowledge acquired in other disciplines related to organic chemistry.

3.Assessment (1st and 2nd call)

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

The student must demonstrate that it has achieved learning outcomes expected by the following evaluation activities:

According to the rules of evaluation of the University of Zaragoza, the student may submit to continuous assessment or the unique global test. The student will receive the highest score obtained in the case of presenting to both exams CA and GT).

CONTINUOUS EVALUATION

The evaluation of knowledge will be continuously assessing each of the parties that comprise the course.

- Monitoring and active participation in classes, resolution of practical questions and submission of abstracts of talks which could be programmed (5%)
- Realization of works and researches literature (25%)
- Test written (70%)

To be accepted for the written test the student will have had to carry out all the proposed activities and have been delivered, when so requested, before the designated date. The score this test is modulated with the activities carried out throughout the course according to the indicated percentage.

At the end of this test, which will be made as latest 3 days before the global test, will be the final grades of the subject, in accordance with the continuous assessment.

GLOBAL SINGLE TEST

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Regardless of the continuous assessment, there will be a single global test for the subject in which you can get a rating from 0 to 10 points.

For this global test note only the same results shall be taken into account, and previous results from the continuous assessment shall not be considered.

The number of official calls for review to which the registration gives right (2 per registration) as well as the consumption of such calls is set to permanence regulations for undergraduate studies and regulation of standards of assessment of learning. This latter Regulation, also the general criteria of the test design will be adjusted and rating, and according to the same system will be made public hours, date and place that the review will be held at publish ratings. Such regulations can be found at: <http://wzar.unizar.es/servicios/coord/norma/evalu/evalu.html>

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as:

- 1. Lectures (3 ECTS)
- 2. Exercises (1 ECTS)
- 3. Bibliographic work & seminar (1 ECTS)
- 4. Attendance at lectures at the Faculty of Sciences (follow-up study) all activities should be indicated through teaching digital ring

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures
- Troubleshooting: all the lectures will be followed by the corresponding classes of exercises.
- Practice sessions

4.3. Syllabus

The course will address the following learning tasks:

- Topic 1. Asymmetric synthesis. Concepts and applications. Groups of guards in organic synthesis. Stereoselectivity. Asymmetric reactions of unsaturated systems $C = x$. adding models.
- Topic 2. Normal kinetic resolutions (KR) and parallel (PKR). Dynamic kinetic resolution (DKR). Dynamic kinetic asymmetric transformation (DYKAT).
- Topic 3. Study of reaction mechanisms. Computational approaches (concerted reactions and pericyclicas).
- Topic 4. Organic reactions mediated by transition metals. Hydroformylation. Alilacion Nucleophilic. Cross.coupling.
- Topic 5. Catalysis in organic chemistry. Asymmetric Organocatalysis.
- Topic 6. Advanced organic synthesis. Introduction to analysis retrosynthetic.
- Topic 7. New trends in organic chemistry. Biological organic chemistry.

All lectures will be followed by the corresponding classes of problems.

4.4. Course planning and calendar

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Calendar of sessions and presentations

The face-to-face sessions (lectures and problems) will take place in the classroom and at the time indicated by the Secretariat of the Faculty of science and it will be available at the beginning of the course on the web: <http://ciencias.unizar.es>.

From the first week of the course will be available to students, in teaching digital ring, a listing of works that they choose. The delivery will be by email in any of the formats PDF, PPT (X) or DOC (X) not being necessary to have it printed. The filing date shall be 15 days prior to the final test for the continuous assessment.

The date, place and time of this test will be announced in advance on the notice board of the Department of organic chemistry and teaching digital ring.

The subject (global) final test will be held at the place, date and time indicated by the Faculty of Sciences and will be available at the beginning of the course on the web: <http://ciencias.unizar.es>

Classes will begin on the date corresponding to the start of the second semester classes.

Class schedules, classroom and the calendar of exams will be published on the website of the Faculty of Sciences.

Everything related to the continuous assessment (choice and delivery of works)-related activities will be published through the digital platform ADD. The evidence regarding the continuous evaluation will be also published on the notice board of the Department of Organic Chemistry.

4.5. Bibliography and recommended resources

Online resources:

Organic Chemistry Portal -
[<http://www.organic-chemistry.org/>]

Organic Synthesis - [<http://www.orgsyn.org/>]