

COURSE GUIDE

2021/22

Faculty 215 - Faculty of Chemistry

Cycle Not Applicable

Degree GQUIMI20 - Bachelor's Degree in Chemistry

Year Second year

COURSE

26113 - Organic Chemistry I

Credits, ECTS: 9

COURSE DESCRIPTION

Basic concepts of Organic Chemistry, such as molecular structure and reactivity of the principal functional groups will be presented. This knowledge will be applied to the synthesis of structurally simple molecules.

COMPETENCIES/LEARNING RESULTS FOR THE SUBJECT

Basic structural features, and chemical and physical properties, of hydrocarbons and other families of organic compounds are covered along with an introduction to organic reactions mechanisms.

The aim is that students develop basic competences as specified in RD 1393/2007 that correspond to the sophomore level. Also, the following transversal competences (Fundamental Module M02) will be acquired:

- M02CM08: the ability to discern the appropriate instrumental technique, individual or combined, for the characterization of chemical substances.

- M02CM09: the ability to present, orally and on written, chemical processes and phenomena in a clear and understandable manner.

Likewise, taking this subject should allow students to acquire the following competences specific to Organic Chemistry:

- M02CM02: to know the structure, properties, preparation methods and main reactivity patterns of chemical elements and compounds derived thereof, either organic or inorganic.

- M02CM03: the ability to plan and carry out simple processes of synthesis and characterization of compounds. To carry out chemical experiments in a reliable manner, using appropriate techniques, and monitoring the relevant observations and their correct interpretation.

- M02CM05: To understand the relationships between chemical structure, properties and processing of the different types of materials and their aftermath classification according to the applications sought.

The coordination, both horizontal and vertical, of the subject within the Module and the Degree will be supervised by the Commission of Coordination of the Degree.

CONTENIDOS TEÓRICO-PRÁCTICOS

Hydrocarbons, alkanes and cycloalkanes. Alkenes and polyenes. Alkynes. Benzene and arenes. Structure, obtaining and reactivity.

Functional groups with a single carbon-heteroatom bond. Alkyl and aryl halides. Alcohols, glycols and phenols. Ethers and epoxides. Amines and nitrocompounds. Structure, obtaining and reactivity.

The carbonyl group and derivatives. Aldehydes and ketones. Structure, obtaining and reactivity.

The carboxylic group and derivatives. Carboxylic acids. Acyl halides. Ketenes. Anhydrides. Esters. Amides. Nitriles. Structure, obtaining and reactivity.

TEACHING METHODS

All teaching resources regarding the subject will be available on the web of UPV/EHU at the outset of the fall. Lectures will be combined with as many as possible face-to-face sessions devoted to exercises. Additional exercises and problems will be also provided for personal training. Doubts and questions will be solved individually during tutorial hours. Efforts will be directed to get as much direct student-teacher interaction as possible.

TYPES OF TEACHING

Types of teaching	M	S	GA	GL	GO	GCL	TA	TI	GCA
Hours of face-to-face teaching	50	20	20						
Horas de Actividad No Presencial del Alumno/a	75	30	30						

Legend: M: Lecture-based

S: Seminar

GA: Applied classroom-based groups

GL: Applied laboratory-based groups

GO: Applied computer-based groups

GCL: Applied clinical-based groups

TA: Workshop

TI: Industrial workshop

GCA: Applied fieldwork groups

Evaluation methods

- Continuous evaluation
- End-of-course evaluation

Evaluation tools and percentages of final mark

- Written test, open questions 80%
- Exercises, cases or problem sets 20%

ORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

A) GENERAL RULE

General Regulations adopted by UPV/EHU (BOPV of March, 2017) concerning the assessment of students achievement in the Degrees given by UPV/EHU will be applicable. For more information, see section 2 of such Regulations, articles 8, 9 and 12.

B) CONTINUOUS ASSESSMENT

Continuous assessment will be applied during the ordinary call only, with the following parts and percentages:

- 20% Two written exams covering parts of the subjects in progress.
- 80% Final written exam fully covering the subjects.

If someone does not make the exam, he or she will be rated cero. In case it is the Final exam, the ordinary call would get extinct.

To be eligible for averaging, a mark of 4.0 or higher must be obtained in the Final exam.

Students have the option to renounce a call by informing in writing the professor in charge of the subject. Requests need to be submitted before the fixed deadline, which will be not before one month in advance to the end of the lecturing period. Should this action be taken the subject will be rated as NOT PRESENTED (thee call will not get extinct).

C) ASSESSMENT BY SINGLE FINAL EXAMINATION

Assessment by a single examination is feasible only if a renounce to the continuous assessment has been submitted by the student on time. Requests need to be submitted in writing to the professor in charge of the subject during the first 18 weeks of regular lecturing period.

The single Final examination will account for 100% of the grading.

If someone does not make the Final exam, the grading will be NOT PRESENTED and the call will not get extinct.

EXTRAORDINARY EXAMINATION PERIOD: GUIDELINES AND OPTING OUT

Special call will consist of a single Final Examination which will account for 100% of the grading.

If someone does not make such a Final Exam, the grading will be NOT PRESENTED and the call will not get extinct.

MANDATORY MATERIALS

At least one book among the basic titles listed below is highly recommended. The professor in charge of the subject will give additional directions.

BIBLIOGRAFÍA

Basic bibliography

1. T. W. G. Solomons, C. B. Fryhle, S. A. Snyder, ORGANIC CHEMISTRY, 12th Edition, Ed. Wiley, 2016.
2. D. R. Klein, ORGANIC CHEMISTRY, 3th Edition, Ed. Wiley, 2016.
3. L. G. Wade, Jr., QUÍMICA ORGÁNICA, 7ª Edición, Ed. Pearson Prentice Hall, Madrid, 2004.
4. P. Y. Bruice, , QUÍMICA ORGÁNICA, 5ª Edición, Ed. Pearson Prentice Hall, México, 2008.
5. F. A. Carey, QUÍMICA ORGÁNICA, 6ª Edición, Ed. McGraw-Hill, México, 2006.
6. R. T. Morrison, R. N. Boyd, QUÍMICA ORGÁNICA, 5ª Edición, Ed. Pearson Educación, México, 1998.
7. K. P. C. Vollhardt, N.E. Schore, QUÍMICA ORGÁNICA, 5ª ed., Omega, S.A., Barcelona, 2008.
8. K. P. C. Vollhardt, N.E. Schore KIMIKA ORGANIKOA, 1ª ed., UPV/EHU, Leioa, 2008.
9. J. E. McMurry, QUÍMICA ORGÁNICA, 5ª ed., International Thomson editores S.A, México, 2001.
10. F. García, J. A. Dobado, PROBLEMAS RESUELTOS DE QUÍMICA ORGÁNICA, Paraninfo, 2007.

Detailed bibliography

1. F. A. Carey, R. J. Sundberg, ADVANCED ORGANIC CHEMISTRY, Partes A y B, 5ª Edición, Springer, 2007.
2. M. B. Smith, J. March, MARCH'S ADVANCED ORGANIC CHEMISTRY: REACTIONS, MECHANISMS AND STRUCTURE, Wiley, 2007

Journals

The Journal of Organic Chemistry: <http://pubs.acs.org/journal/jocea>

Organic Letters: <http://pubs.acs.org/journal/orlef7>

European Journal of Organic Chemistry: <http://www3.interscience.wiley.com/journal/27380/home>

Tetrahedron: <http://www.sciencedirect.com/science/journal/00404020>

Tetrahedron Letters: <http://www.sciencedirect.com/science/journal/00404039>

Organic and Biomolecular Chemistry: <http://www.rsc.org/Publishing/Journals/Ob/Index.asp>
The Journal of Chemical Education: <http://jchemed.chem.wisc.edu/>

Web sites of interest

Organic Chemistry Portal: <http://www.organic-chemistry.org/>
Organic Resources Worldwide: <http://www.organicworldwide.net/>
Grupo especializado de química orgánica de la RSEQ: <http://www.ucm.es/info/rsequim/geqo/>
Chemical and Engineering News: <http://www.ucm.es/info/rsequim/geqo/>
Blog de Química: <http://elblogdeuhogris.blogspot.com/>

OBSERVATIONS