

**1. General information****Course:** ORGANIC CHEMISTRY**Type:** BASIC**Degree:** 344 - CHEMICAL ENGINEERING**Center:** 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY**Year:** 2**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 57714**ECTS credits:** 6**Academic year:** 2022-23**Group(s):** 21**Duration:** C2**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** SONIA MERINO GUIJARRO - Group(s): 21

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**Lecturer:** JULIAN RODRIGUEZ LOPEZ - Group(s): 21

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**2. Pre-Requisites**

Not established

**3. Justification in the curriculum, relation to other subjects and to the profession**

Chemical Engineering is an open area, which based on the basic sciences, Mathematics, Physics and Chemistry, is constantly evolving. It interacts, complements, and overlaps with traditional and newer engineering.

The subject is included in the basic training module. Taking into account the context of the studies of this subject (Chemical Engineering degree), special attention will be paid to highlight the practical aspect of Organic Chemistry, so that students will be able to value its importance both in the different aspects of daily life and in the chemical industry. It will allow them to know the main fields of application. In addition, it is intended that students acquire an awareness of environmental protection by developing the idea that Organic Chemistry should be used to improve the quality of life.

Their training in this subject is of special relevance, for example, in the processes of the petrochemical industry, polymers, food, pharmaceuticals, agrochemistry, new materials, etc., as well as getting started in scientific research.

**4. Degree competences achieved in this course****Course competences**

Code	Description
E04	Ability to understand and apply the principles of basic knowledge of general chemistry, organic and inorganic chemistry and their applications in engineering.
G03	Ability to solve problems with initiative, decision making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of Chemical Engineering.
G20	Ability to learn and work autonomously
G21	Ability to apply theoretical knowledge to practice

**5. Objectives or Learning Outcomes****Course learning outcomes****Description**

To know the different types of organic compounds, their physico-chemical properties, reactivity and main methods of synthesis.

To understand the importance of organic products in the chemical industry and in everyday life.

To develop in the student the capacity of initiative to raise and solve specific problems of Organic Chemistry, as well as to interpret the results obtained.

To know the main aspects of terminology and nomenclature in Organic Chemistry.

To ensure that the student is able to search and select information in the field of Organic Chemistry and that he is able to process and present it properly both orally and in writing, developing his capacity for synthesis, being critical and objective.

To develop your ability to work in a team.

To learn to elaborate topics and acquire skills in oral and written presentation at the time of the presentation of results.

To acquire an awareness of environmental protection by developing the idea that Organic Chemistry should be used to improve the quality of life.

To know the stereochemistry of organic compounds and the stereoselectivity of the main reactions.

To know the structure of the main organic functional groups.

To know the mechanisms of the main organic reactions.

To know the main areas of application of Organic Chemistry as well as the characteristics of the Organic Chemistry Industry

To arouse and promote in the student all those values and attitudes inherent in scientific and business activity.

To know how to apply the knowledge of Organic Chemistry to the solution of synthetic and structural problems.

## 6. Units / Contents

- Unit 1: Drawing and nomenclature of organic molecules.  
 Unit 2: Electronic structure of organic compounds.  
 Unit 3: Isomerism and stereoisomerism. Conformational analysis.  
 Unit 4: Stereochemistry.  
 Unit 5: Acidity and basicity of organic compounds.  
 Unit 6: Organic reactions.  
 Unit 7: Nucleophilic substitution and elimination reactions.  
 Unit 8: Nucleophilic addition to the carbonyl group.  
 Unit 9: Addition reactions to carbon-carbon multiple bonds.  
 Unit 10: Electrophilic aromatic substitution.

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	E04 G03	0.8	20	N	-	
Workshops or seminars [ON-SITE]	Project/Problem Based Learning (PBL)	E04 G20	1.36	34	N	-	
Study and Exam Preparation [OFF-SITE]		G21	3.6	90	N	-	
Final test [ON-SITE]		G20	0.08	2	Y	Y	
Analysis of articles and reviews [OFF-SITE]	Assessment tests	G20	0.16	4	Y	N	
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.24</b>			<b>Total class time hours: 56</b>				
<b>Total credits of out of class work: 3.76</b>			<b>Total hours of out of class work: 94</b>				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

## 8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Final test	0.00%	100.00%	Students who fail either of the two mid-term tests, or both, must pass the final test in order to pass the course.
Mid-term tests	100.00%	0.00%	In order to pass the course with continuous assessment, it is necessary to pass the two mid-term tests.
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

### Evaluation criteria for the final exam:

#### Continuous assessment:

In the continuous assessment mode, it will be required to pass the two mid-term tests with a minimum grade of 5 out of 10.

#### Non-continuous evaluation:

A minimum of 5 out of 10 will be required in a single final exam.

### Specifications for the resit/retake exam:

A minimum of 5 out of 10 will be required in a single final exam.

## 9. Assignments, course calendar and important dates

### Not related to the syllabus/contents

Hours	hours
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## 10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Gómez Aspe, R.	Teoría y Problemas Resueltos de Química Orgánica	Editorial Síntesis			2013	
Carey, Francis A.	Química orgánica, 9ª ed.	McGraw Hill,		978-607-15-1210-9	2014	
Clayden, Jonathan	Organic Chemistry, 2nd ed.	Oxford University Press,		978-0-19-927029-3	2012	
Ege, Seyhan	Química orgánica: estructura y reactividad. Tomo I	Reverté		978-84-291-8025-1	2013	
McMurry, John	Química orgánica, 9ª ed.	Cengage Learning		978-607-526-558-2	2018	

Meislich, H.; Nechamkin, H.;	Química Orgánica, 3ª ed.	McGraw-Hill	959-41-0132-3	2001
Sharefkin, J.; Hedemenos, G.	Química orgánica: estructura y	Interamericana		
Ege Seyhan	reactividad. Tomo II	Adrián de Weert y Iberoamericana	978-84-291-8026-8	2013
Quiñoá Cabana, Emilio	Cuestiones y ejercicios de química orgánica : una guía de es	McGraw-Hill,	84-481-4015-X	2004
Dobado Jiménez, J.; García Calvo-	Química Orgánica. Ejercicios	Garceta Grupo		
Flores, F.; Isac garcía, J.	comentados	Editorial	978-84-1545-220-1	2012
Wade, Jr., L. G.; Simek, J. W.	Química Orgánica, 9ª ed., Vol. 2	Pearson	978-607-32-3849-6	2017
Soto Cámara, José Luis	Química orgánica	Síntesis	84-7738-399-5	2003
Vollhardt, K. Peter C.	Química orgánica: estructura y función, 5ª ed.	Omega	978-84-282-1431-5	2008
Wade, Jr.; L. G., Simek, J. W.	Química Orgánica, 9ª ed., Vol. 1	Pearson	978-607-32-3847-2	2017
Hornback, J. M.	Organic Chemistry, 2nd ed.	Brooks Cole	0-534-38951-1	2006
Merino Guijarro, S.; Díez Barra, E.	Química Orgánica General en Problemas	Ediciones de la UCLM	978-84-9044-412-2	2020
	<a href="http://doi.org/10.18239/manuales_2020.23.00">http://doi.org/10.18239/manuales_2020.23.00</a>			