UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: ORGANIC CHEMISTRY I
Code: 14306
Type: CORE COURSE
ECTS credits: 6
Degree: 376 - UNDERGRADUATE DEGREE PROGRAMME IN PHARMACY
Academic year: 2022-23
Center: 14 - FACULTY OF PHARMACY
Group(s): 10
Year: 1
Duration: C2
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **ANTONIO MANUEL RODRÍGUEZ GARCÍA** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
Facultad de Farmacia	QUÍMICA INORG., ORG., Y BIOQ.		AntonioM.Rodriguez@uclm.es	

Lecturer: **ANTONIO SANCHEZ RUIZ** - Group(s): **10**

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Lecturer: **ANA MARÍA SOUSA HERVÉS** - Group(s): **10**

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2. Pre-Requisites

No prerequisites are established for this subject, although it is recommended that the student has previously passed the following tests General Chemistry and Laboratory Initiation.

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

Pharmacists are health professionals who are experts in medicines and in the use of medicines for therapeutic purposes in human beings. The large percentage of medicines and medicines are organic molecules that interact with the organic biomolecules present in the body. The course of Organic Chemistry I, together with the subject of Organic Chemistry II, is based fundamentally on the study of compounds made up of carbon atoms, the knowledge of functional groups, and their chemical properties. Ultimately these properties will be closely related to their pharmacological and medical properties and therefore this subject is the basis for Pharmaceutical Chemistry I and Pharmaceutical Chemistry II.

4. Degree competences achieved in this course

Course competences

Code	Description
B01	Proficiency in a second foreign language at level B1 of the Common European Framework of Reference for Languages.
B02	Knowledge of Information and Communication Technologies (ICT).
B03	A correct oral and written communication
B04	Ethical commitment and professional deontology.
B05	Ability to develop those learning skills necessary to undertake further studies.
EQ01	Identify, design, prepare, analyse and produce active principles, drugs and other materials and products of sanitary interest.
EQ02	Adequately choose the techniques and methodologies for the evaluation, design and application of chemical reagents, laboratory methodologies and analytical techniques.
EQ03	Complete standard laboratory processes including the employment of scientific equipment related to synthesis and analysis.
EQ04	Evaluate risks/hazards associated to the use of chemical substances and lab processes.
EQ08	Know and understand the chemical nature and behavior of functional groups in organic molecules.
EQ11	Know and apply the main structural determination techniques, including spectroscopy.
G01	Identify, design, obtain, analyze, control and produce drugs and medicines, as well as other products and raw materials of sanitary interest for human or veterinary use.
G02	Evaluate the therapeutic and toxic effects of substances with pharmacological activity.
G03	Know how to apply the scientific method and acquire skills in the handling of legislation, sources of information, bibliography, elaboration of protocols and other aspects considered necessary for the design and critical evaluation of preclinical and clinical trials.
G04	Design, prepare, supply and dispense medicines and other products of health interest.
G05	Provide therapeutic advice in pharmacotherapy and dietotherapy, as well as in the nutritional and food field in the establishments where they provide services.
G06	Promote the rational use of medicines and medical devices, as well as to acquire basic knowledge in clinical management, health economics and the efficient use of health resources.
G07	Identify, evaluate and assess problems related to drugs and medicines, as well as participate in pharmacovigilance activities.
G08	Conducting clinical and social pharmacy activities, following the pharmaceutical care cycle.
G09	Intervene in health promotion and disease prevention activities at the individual, family and community levels, with an integral and multi-professional vision of the health-disease process.

G10	Design, apply and evaluate clinical reagents, methods and analytical techniques, knowing the basic principles of clinical analysis and the characteristics and contents of laboratory diagnostic reports.
G11	Evaluate the toxicological effects of substances and design and apply appropriate tests and trials.
G12	Develop hygienic-sanitary analyses, especially those related to food and environment.
G13	Develop communication and information skills, both oral and written, to deal with patients and users of the centre where they carry out their professional activity. Promote the capacity to work and collaborate with multidisciplinary teams and those related to other health professionals.
G14	Know the ethical and deontological principles according to the legislative, regulatory and administrative provisions governing professional practice, understanding the ethical implications of health in a changing social context.
G15	Recognise own limitations and the need to maintain and update professional competence, with particular emphasis on self-learning of new knowledge based on scientific evidence.
T01	Critical thinking skills based on the application of the scientific method
T02	Ability to manage quality scientific information, bibliography, specialized databases and resources accessible through the Internet.
T03	Handling of basic and specific software for the treatment of information and experimental results.
T04	Motivation for quality, safety at work and awareness of environmental issues, with knowledge of the internationally recognised systems for the correct management of these aspects.
T05	Organizational, planning and implementation skills.
T06	Ability to address human resources decision-making and management.
T07	Ability to work as a team and, where appropriate, exercise leadership functions, encouraging entrepreneurship.
T08	Develop interpersonal skills and the ability to function in an international and multicultural context.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Preparation of reports, summaries and presentations on bibliographic or experimental works, either individually or in teams, applying the capacity for criticism and self-criticism.

Ability to design simple organic compound synthesis from certain starting products and involving more than one reaction.

Characterization and identification of functional groups in organic compounds.

Ability to apply the knowledge acquired in laboratory practice and in solving problems and issues related to organic compounds.

Ability to name organic compounds according to IUPAC standards and represent their structure from the systematic name.

Correlate the structure of organic compounds with their physical properties, reactivity and stability.

To develop the necessary laboratory processes for the transformation, separation, isolation and purification of organic compounds, estimating the possible associated risks.

Recognize the three-dimensional structure of organic compounds and its implications.

6. Units / Contents

Unit 1: Representation and Nomenclature of Organic Molecules

- **Unit 1.1** Empiric and molecular Formula.
- **Unit 1.2** How to represent a organic molecule
- **Unit 1.3** Functional group and classification of organic compounds

Unit 2: Electrophilic Addition Reaction.

- **Unit 2.1** Addition to C=C
- **Unit 2.2** addition to triple bonds
- **Unit 2.3**
- **Unit 2.4**
- **Unit 2.5**

Unit 3: Laboratory Practices

- **Unit 3.1** steam destilation
- **Unit 3.2** chromatogrphic techniques
- **Unit 3.3**
- **Unit 3.4**

Unit 4:

- **Unit 4.1**
- **Unit 4.2**
- **Unit 4.3**
- **Unit 4.4**
- **Unit 4.5**
- **Unit 4.6**

Unit 5:

- **Unit 5.1**
- **Unit 5.2**
- **Unit 5.3**
- **Unit 5.4**

Unit 6:

- **Unit 6.1**
- **Unit 6.2**
- **Unit 6.3**
- **Unit 6.4**

Unit 7:

- **Unit 7.1**
- **Unit 7.2**
- **Unit 7.3**

Unit 7.4
Unit 7.5
Unit 8:
Unit 8.1
Unit 8.2
Unit 8.3
Unit 9:
Unit 9.1
Unit 9.2
Unit 9.3
Unit 9.4
Unit 9.5

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]	Combination of methods	B01 B02 B03 B04 B05 EQ01 EQ02 EQ03 EQ04 EQ08 EQ11 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.92	23	Y	N	
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	B01 B02 B03 B04 B05 EQ01 EQ02 EQ03 EQ04 EQ08 EQ11 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.8	20	Y	Y	
Workshops or seminars [ON-SITE]	Combination of methods	B01 B02 B03 B04 B05 EQ01 EQ02 EQ03 EQ04 EQ08 EQ11 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.52	13	Y	N	
Study and Exam Preparation [OFF-SITE]	Self-study	B01 B02 B03 B04 B05 EQ01 EQ02 EQ03 EQ04 EQ08 EQ11 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	2.07	51.75	Y	N	
Study and Exam Preparation [OFF-SITE]	Problem solving and exercises	B01 B02 B03 B04 B05 EQ01 EQ02 EQ03 EQ04 EQ08 EQ11 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	1.53	38.25	Y	N	
Final test [ON-SITE]	Assessment tests	B01 B02 B03 B04 B05 EQ01 EQ02 EQ03 EQ04 EQ08 EQ11 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.16	4	Y	Y	
		Total:	**6**	**150**			
		Total credits of in-class work: 2.4					**Total class time hours: 60**
		Total credits of out of class work: 3.6					**Total hours of out of class work: 90**

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
Test	70.00%	70.00%	
Laboratory sessions	20.00%	20.00%	
Assessment of active participation	10.00%	10.00%	
Total:	**100.00%**	**100.00%**	

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).

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	23
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	20
Workshops or seminars [PRESENCIAL][Combination of methods]	13
Study and Exam Preparation [AUTÓNOMA][Self-study]	51.75
Study and Exam Preparation [AUTÓNOMA][Problem solving and exercises]	38.25
Final test [PRESENCIAL][Assessment tests]	4

Global activity

Activities	hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	23
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	20
Workshops or seminars [PRESENCIAL][Combination of methods]	13
Study and Exam Preparation [AUTÓNOMA][Problem solving and exercises]	38.25
Final test [PRESENCIAL][Assessment tests]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	51.75
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Smith, M. B. y March, J.	March's Advanced Organic Chemistry	Wiley		978-1-119-37179-3	2019	
	https://www.wiley.com/en-es/March%27s+Advanced+Organic+Chemistry%3A+Reactions%2C+Mechanisms%2C+and+Structure%2C+8th+Edition-p-9781119371793					
Carey, Francis A.	Organic chemistry	McGraw-Hill		0-07-115148-6	2003	
Carey, Francis A.	Química orgánica	McGraw Hill		970-10-5610-8	2006	
Ege, Seyhan	Organic chemistry : structure and reactivity	Hougton Mifflin Company		0-618-31809-7	2004	
Chaloner, P.	Organic Chemistry: A Mechanistic Approach	CRC Press.		9780429171369	2015	
	https://www.taylorfrancis.com/books/mono/10.1201/b17689/organic-chemistry-penny-chaloner					
Soto Cámara, José Luis	Química orgánica Vol. I: conceptos básicos.	Síntesis		9788477383994	1999	
	https://www.sintesis.com/qu%C3%ADmica%20b%C3%A1sica-140/qu%C3%ADmica%20org%C3%A1nica.%20vol.%20i%3A%20conceptos%20b%C3%A1sicos-ebook-1300.html					
Clayden, J., Greeves, N.; Warren, S.	Organic Chemistry	Oxford University Press		9780199270293	2012	
	https://global.oup.com/ushe/product/organic-chemistry-9780199270293?q=organic%20chemistry&cc=ang=en					
Vollhardt, K. Peter C.	Química orgánica : estructura y función	Omega		978-84-282-1431-5	2007	
Wade, L. G. , Jr.	Química orgánica	Pearson/Prentice Hall		84-205-4102-8	2004	
	La editorial Digitalia tiene varios libros de Química Orgánica					Acceso on line libre para alumnos
	http://www.digitaliapublishing.com/					
	La editorial Pearson tiene varios libros de Química Orgánica					Acceso on line libre para alumnos
	http://www.conten.es/ib/NPortada?CodPortada=1000188					
D'Auria, Taglialatela-Scafati, Zampella	Guía razonada para resolver problemas de Química Orgánica	Loghía		978-88-95122-45-8	2018	
	https://loghia.com/shop/index.php?id_product=54&controller=product&id_lang=1					
Soto Cámara, José Luis.	Química orgánica Vol. II: hidrocarburos y sus derivados halogenados.	Síntesis.		9788477389057	1999	
	https://www.sintesis.com/qu%C3%ADmica%20b%C3%A1sica-140/qu%C3%ADmica%20org%C3%A1nica.%20volumen%20ii%3A%20hidrocarburos%20y%20sus%20derivados%20halogenados-ebook-1302.html					
Soto Cámara, José Luis.	Química orgánica Vol. III: grupos funcionales y heterociclos.	Síntesis.		9788497563239	1999	
	https://www.sintesis.com/qu%C3%ADmica%20b%C3%A1sica-140/qu%C3%ADmica%20org%C3%A1nica.%20vol.%20iii.%20grupos%20funcionales%20y%20heterociclos-ebook-1301.html					