

DATE OF APPROVAL BY THE DEPARTMENT COUNCIL			20-12-2016		
MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Chemistry	Organic Chemistry -I	1 st	2 nd	6	Compulsory
LECTURER(S)			Postal address, telephone nº, e-mail address		
-Antonio José Entrena Guadix (aentrena@ugr.es ; 958 243848) -Francisco Franco Montalbán (ffranco@ugr.es ; 958 240715) -Mónica Díaz Gavilán (monicadg@ugr.es ; 958 240726) -María del Carmen Núñez Carretero (mcnunez@ugr.es ; 958 248973) -José Francisco Domínguez Seglar (jfdoming@ugr.es ; 958 243847) -José Antonio Gómez Vidal (jagvidal@ugr.es ; 958 240719) -Rosario María Sánchez Martín (rmsanchez@ugr.es ; 958 246678)			DEPARTAMENTO DE QUÍMICA FARMACÉUTICA Y ORGÁNICA. Facultad de Farmacia. Campus de Cartuja. 18071. GRANADA. Phone: 958243843		
			TUTORSHIPS		
			http://www.ugr.es/~qfo/pdf/Tutorias2016-2017.pdf A.J. Entrena: Monday, Tuesday, Thursday; 9:30-11:30 F. Franco: Tuesday, Wednesday, Thursday; 11:00-13:00 M. Díaz: Tuesday, Wednesday, Thursday; 11:00-13:00 M.C. Núñez: Tuesday, Thursday; 9:30-11:30 Wednesday; 10:30-12:30 J.F. Domínguez: Monday, Tuesday, Thursday; 9:30-11:30 J.A. Gómez: Tuesday, Thursday; 10:30-13:30 R.M. Sánchez: Monday, Wednesday, Friday; 14:00-16:00		



DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT	
Pharmacy	
PREREQUISITES and/or RECOMMENDATIONS (if necessary)	
The student should have taken the previous Chemistry courses	
BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ¿??)	
Structure and stereochemistry of the organic compounds. Common analytical techniques used for the elucidation of the organic compounds. Alkenes, alkenes and alkynes, reactivity and synthetic methods..	
GENERAL AND PARTICULAR ABILITIES	
<p>Generic Abilities: CG1</p> <p>Specific Abilities: CEM1.3, CEM1.4, CEM1.5, CEM1.8 y CEM1.11</p>	
OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)	
<p>The student should be able to:</p> <ol style="list-style-type: none"> 1. Understand and apply the knowledge comply in the subject. 2. Use the basic organic chemistry laboratory operations in order to synthesize, purify and structurally characterize simple organic molecules. 	
DETAILED SUBJECT SYLLABUS	
<p>TEORIC CHAPTERS:</p> <ol style="list-style-type: none"> 1. Chapter 1. MOLECULAR CONSTITUTION Main characteristic of carbon bonds. Multiple bond systems: aromaticity and conjugation. 2. Chapter 2. MOLECULAR CONFORMATION Conformational Analysis. Cyclic and acyclic organic carbon chains. 3. Chapter 3. MOLECULAR CONFIGURATION: STEREOCHEMISTRY Stereoisomerism: concept and classification of the organic compounds. Chirality. Optical activity. Absolute and relative configuration: The Cahn, Ingold and Prelog Rules. Molecules with several chiral centers. Optical isomers of cyclic compounds. Stereochemistry of carbohydrates. Stereochemistry of compounds without chiral centers. The importance of chirality in pharmacy. 4. Chapter 4. STRUCTURE ELUCIDATION OF ORGANIC COMPOUNDS BY PHYSICAL METHODS Infrared spectroscopy. Mass Spectrometry. NMR spectroscopy: Theory and applications of the chemical shift. Coupling constants and their utility in the elucidation of the organic structure. Modern NMR techniques. 5. Chapter 5. SATURATED HIDROCARBONS: ALKANES Classification of hydrocarbons: Alkanes: physical properties and natural sources. Synthesis and reactivity of alkanes. Halogenation of alkanes: radical substitution reaction on saturated carbons. 6. Chapter 6. UNSATURATED HIDROCARBONS: ALKENES 	



Structure and physical properties. Synthesis of alkenes: Elimination reactions. Reactivity of alkenes: Addition reactions on double bonds. Oxidation reactions. Allylic substitutions. Conjugated dienes. Polymerization reactions.

7. Chapter 7. **UNSATURATED HYDROCARBONS: ALKYNES**

Structure and physical properties. Acidity of acetylide. Synthesis and reactivity of alkynes.

LABORATORY:

- 1. Cannizzaro reaction on benzaldehyde.
- 2. Synthesis of acetanilide.
- 3. Synthesis of dibenzylideneacetone.
- 4. Synthesis of ethyl acetate.
- 5. Liquid-liquid extraction for the separation of organic mixtures.

READING

BASIC BIBLIOGRAPHY:

- C. VOLLHARDT, N.E. SCHORE. Química Orgánica: Estructura y Función. Ed. Omega. 3ª Edición, 2008.
- DAVID KLEIN. Química Orgánica. Ed. Médica Panamericana, 1ª Ed. 2012.
- F.A. CAREY. Química Orgánica. Ed. McGraw-Hill. 6ª Edición, 2006.
- L.G. WADE, Jr. Química Orgánica. Ed. Pearson, 7ª Edición, 2012.
- T. W. GRAHAM SOLOMONS. Organic Chemistry. Ed. Wiley. 10ª Edición, 2010.
- J. CLAYDEN, N. GREEVES, S. WARREN, P. WOTHERS. Organic Chemistry. Oxford University Press, 2001.

COMPLEMENTARY BIBLIOGRAPHY:

- J. MARCH. Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, 7ª edition Ed. Wiley, 2013.
- F. A. Carey; R. J. Sundberg. Advanced Organic Chemistry, Part A: Structure and Mechanisms
Advanced Organic Chemistry: Part B: Reaction and Synthesis
5 Edition, Ed Springer, 2007

PROBLEMS

- F. GARCIA CALVO-FLORES, J. A. DOBADO, Problemas resueltos de Química Orgánica, Ed. Thomson, 1ª Ed, 2007.
- H. MEISLICH. Química Orgánica, (3ª Ed.). Ed. Mc Graw Hill-Interamericana, 2001.
- E. QUIÑOÁ y R. RIGUERA. Cuestiones y ejercicios de Química Orgánica. Una guía de autoevaluación (2ª Ed.) Ed. Mc Graw Hill 2004.

NOMENCLATURE

- W.R. PETERSON. Formulación y Nomenclatura. Química Orgánica. EUNIBAR.
- E. QUIÑOÁ, R. RIGUERA. Nomenclatura y representación de los compuestos orgánicos. Ed. Mc Graw-Hill, 2005.

EVALUATION (EVALUATION CRITERIA)

GENERAL CRITERIA:

1. The evaluation will be based on exams and personal work made by the student along the semester.
2. Evaluation methods will be established by the instructor/instructors of the subject, at the beginning of the academic year and according to the guidelines below (see Tables 1 and 2).
3. During the evaluation process the student must show a minimum and uniform knowledge of all the questions evaluated. Exceptionally, the teacher could ask for an additional and supplementary oral exam to justify the student knowledge.



4. Link to Criteria for Students Evaluation (UGR):

<https://goo.gl/uHfqJy>

Year-long evaluation:

- Evaluation methods in Table 1 are applicable to year-long evaluation. The mid-term exam will not be qualifying. The final exam will be compulsory and it will be indispensable requirement to pass it with a minimum mark of 5. The final mark of the subject will be calculated from the marks obtained in the partial exam, the final mandatory exam and any other evaluation method from Table 1 that the instructor/instructors had considered at the beginning of the term.
- The practical lessons are mandatory to pass the subject. The student **MUST ATTEND ALL** the practical lessons and pass the corresponding exam.
- Calls to the practical lessons must be attended by all substitute students at the date and time specified in the call. Students with improperly justified absence during the call will not be call again.
- None of the passed exams will be saved for following academic years or for the September exams. Approved practical lessons will not be saved for the next academic year, neither for the special examination in September.

One-time evaluation:

- Students can apply for one-time evaluation in case of employment related reasons, health issues, incapacity or any other suitably documented reason that might prevent the compliance of year-long evaluation requirements.
- Application period for one-time evaluation and application procedure are established by the Criteria for Students Evaluation (see link above).
- Students under one-time evaluation must pass a theoretical examination and a laboratory practical examination according to what is described in paragraph 3.

Extraordinary examination:

- Extraordinary examination will be possible for those students who failed to pass the subject in the ordinary examination (year-long or one-time evaluation modalities).
- Students under extraordinary evaluation must pass a theoretical examination and a laboratory practical examination according to what is described in paragraph 3.



Table 1. Evaluation methods and significance in the final mark.

LEARNING OUTCOMES	EVALUATION	% MARKING
Final exam	SE.1, SE.2, SE.3 and SE.4	70
Mid-term exam	SE.1, SE.2, SE.3 and SE.4	15-30
Laboratory classes, elaboration and exposition of homework	SE.7, SE.8, SE.9, SE.10, SE.5, SE.11, SE.12 and SE.15	0-15
Class attendance	SE.15	0-5

The values in % of the markings will be set at the beginning of the course by the instructor/instructors of the subject.

Table 2. Codes for the evaluation methods.

EVALUATION METHODS	
SE.1 Long answer written exam	SE.9 Oral examination on laboratory lessons
SE.2 Short answer written exam	SE.10 Elaboration of laboratory notebook
SE.3 Multiple-choice written exam	SE.11 Elaboration of group homeworks
SE.4 Oral exam	SE.12 Elaboration of individual homeworks
SE.5 Exposition of homework	SE.13 Self-assessment
SE.6 Exposition of theory chapters	SE.14 Field tests
SE.7 Practical examination on laboratory lessons	SE.15 Attendance
SE.8 Written examination on laboratory lessons	

RECOMMENDED INTERNET LINKS

Chemistry Dictionary
ChemistryGuide
IUPAC Nomenclature of Organic Chemistry
Organic Syntheses
Organic-Chemistry
[Departamento de Química Farmacéutica y Orgánica \(UGR\)](#)

