

ORGANIC CHEMISTRY –II

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Chemistry	Organic Chemistry-II	2 nd	1 st	6	Compulsory
LECTURER(S)			DEPARTAMENTO DE QUÍMICA FARMACÉUTICA Y ORGÁNICA. Facultad De Farmacia. Campus De Cartuja. 18071. GRANADA. Tfno. 958243843		
<ul style="list-style-type: none"> - Ana Conejo García (aconejo@ugr.es, 958 249583) - José Antonio Gómez Vidal (jagvidal@ugr.es, 958 240719) - María José Pineda de las Infantas y Villatoro (mjpineda@ugr.es, 958 249360) - M^a Dora Carrión Peregrina (dcarrion@ugr.es, 958 240728) - Luisa Carlota López Cara (lcarlotalopez@ugr.es, 958 243849) - Rosario María Sánchez Martín (rmsanchez@ugr.es, 958 246678) 			Tutorships - Ana Conejo: M y J: 12.30-14.00 y X: 9.30-12.30 h - José Antonio Gómez: M y J: 10.30-12.30 h y X: 9.30-11.30 h - M ^a José Pineda de las Infantas: L, M y J: 10.30-12.30 h - M ^a Dora Carrión: M, X y J: 9.30-11.30 h - L. Carlota López : M y J: 10.00-13.00 h - Rosario M ^a Sánchez: L, M y J: 13.30-15.30 h		
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					
Synthesis and reactivity of functional groups. Heterocyclic chemistry					



GENERAL AND PARTICULAR ABILITIES

A. Generic Abilities: CG1

B. Specific Abilities: CE 03, CE 04, CE 05, CE 08 y CE 11

OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)

The student should be able to:

- Understand and apply the knowledge comply in the subject.
- Use the basic organic chemistry laboratory operations in order to synthesize, purify and structurally characterize simple organic molecules.

DETAILED SUBJECT SYLLABUS

TEORIC CHAPTERS:

- Chapter 1. **AROMATIC HIDROCARBONS**. Classification. Physical and spectroscopic properties. Natural source. Electrophilic aromatic substitution. Aryl halides. Nucleophilic aromatic substitution.
- Chapter 2. **HALOGENATED DERIVATIVES**. Alkyl halides. Structure and physical properties. Synthesis. Unimolecular and bimolecular nucleophilic substitution. Allyl and vinyl halides. Organometallic compounds.
- Chapter 3. **ALCOHOLS, ETHERS AND PHENOLS**. Alcohols: structure and classification. Physical and spectroscopic properties. Natural source and synthesis. Chemical reactivity. Transpositions. Acyclic and cyclic ethers. Phenols. Phenolic ethers. Sulfur analogs: Thiols and sulfides.
- Chapter 4. **AMINES**. Structure. Physical properties. Synthesis. Chemical properties. Diazonium salts. Azo-colorants. Quaternary ammonium salts decomposition: Hofmann elimination.
- Chapter 5. **ALDEHYDES AND KETONES**. Structure. Physical and spectroscopic properties. Synthesis. Addition and addition-elimination reactions on carbonyl group. Wittig reaction. Reduction and oxidation reactions. Keto-enol tautomerism. Halogenation. Aldol condensation and related reactions. Unsaturated carbonyl compounds. Conjugate additions.
- Chapter 6. **CARBOXYLIC ACIDS**. Structure. Physical and spectroscopic properties. Synthesis. Acid-base reactions. Transformations to acid derivatives. Reduction, halogenation and decarboxylation reactions.
- Chapter 7. **CARBOXYLIC ACID DERIVATIVES**. Classification. Nomenclature. Physical properties. General reactivity of carboxylic acid derivatives. Claisen condensation and related reactions. Malonic ester synthesis. Acetoacetic ester synthesis.
- Chapter 8. **HETEROCYCLES**. Nomenclature. π -Electron rich heterocycles. π -Electron deficient heterocycles. Reactivity of heterocycles.



LABORATORY:

- 1. Synthesis of aspirin.
- 2. Synthesis of benzocaine.
- 3. Synthesis of cinnamic acid.

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. 2013.
- F.A. CAREY. Química Orgánica. Ed. McGraw-Hill. 9ª Edición, 2014.
- L.G. WADE, Jr. Química Orgánica. Ed. Pearson, 9ª Edición, 2017.
- T. W. GRAHAM SOLOMONS. Organic Chemistry. Ed. Wiley. 12ª Edición, 2017.
- G.M. LOUDON. Organic Chemistry. Oxford University Press, 6ª Edición, 2016.
- J. CLAYDEN, N. GREEVES, S. WARREN, P. WOTHERS. Organic Chemistry. Oxford University Press, 2012.

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.
- M.V. D'AURIA, O. TAGLIATELA, A. ZAMPELLA. Guía razonada para resolver problemas de Química Orgánica. (1ª Ed.) Ed. Loghia 2018

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.

RECOMMENDED INTERNET LINKS

- Chemistry Dictionary



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

