



Course Syllabus

Course Code	Course Title	ECTS Credits
IMPH-151	Organic Chemistry/ Οργανική Χημεία	6
Prerequisites	Department	Semester
None	Health Sciences	Fall/Spring
Type of Course	Field	Language of Instruction
Compulsory	Pharmacy	Greek/English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Dr Yiannis Sarigiannis,	1 st
Mode of Delivery	Work Placement	Corequisites
Face to face	N/A	None

Course Objectives:

The main objectives of the course are to:

- Understand the basic principles and the central role of Organic Chemistry in Pharmacy
- Understand its importance in the function and activity of molecules and their interactions with other molecules
- Study of the physical and chemical properties of the most important organic classes compounds
- Develop the ability to predict the activity of the molecules considering their structure

Learning Outcomes:

After completion of the course students are expected to be able to:

- Use the rules of nomenclature to give correct names for organic compounds, draw correct structures that correspond to a name, and correctly use and recognize common names
- Predict the acidity or basicity of an organic compound based on its structure and chemical characteristics
- Describe the chemistry of the major classes of organic molecules
- Describe the mechanisms of organic reactions and predict the reactivity patterns
- Evaluate information about structure of molecules and their activity
- Explain the structures (hybridization, geometry, and polarity) and compare physical properties (boiling point, melting point, solubility, conformations, and stability) of organic compounds

- Use principles of stereochemistry to locate stereocenters and label stereoisomers, identify chiral compounds, give stereochemical relationships between molecules
- Perform simple laboratory syntheses and experiments to identify the various compounds and their properties

Course Content:

Lectures

- Organic Chemistry Nomenclature
- Alkanes and cycloalkanes
- Stereochemistry and Bioactivity
- Aromatic Compounds: Benzene, Aromatics, Electrophilic aromatic substitution
- Mechanism of Organic Reactions (Nucleophilic Substitution and Elimination)
- Alkyl halides: Alkyl halide reactions
- Alkene: Structure, activity, reactions and synthesis
- Alcohols and ethers: Structure, activity, reactions and synthesis
- Aldehydes and ketones: Synthesis, physical properties, nucleophilic addition reactions, substitution reactions and condensation reactions
- Carboxylic acids and their derivatives: Structure, acidity, reactions and synthesis
- Aliphatic amines and Arylamines: Structure, basicity, reactions and synthesis
- Sources of bioactive compounds
- Relationships between chemical structure and biological activity

Laboratory Exercises:

- Solubility of Organic Compounds
- Extraction
- Recrystallization of benzoic acid
- Analysis of organic compounds by thin layer chromatography (TLC)
- Nucleophilic substitution reactions of alkyl halides (SN1 mechanism)
- Aldehydes and ketones reactions
- Triglyceride hydrolysis (saponification)
- Synthesis of dibenzalacetone via aldol condensation
- Synthesis of acetylsalicylic acid

Learning Activities and Teaching Methods:

Lectures, laboratory exercises, tutorial for education, online quizzes, use of cellphones for short time quizzes

Assessment Methods:

Midterm exams, Final exams, Laboratory reports, Final Lab Exams, Pre-Lab tests (quizzes), Online quizzes

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Organic Chemistry 9 th Edition	John McMurry	Cengage Learning	2016	9781305686465

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Chemistry for Pharmacy Students General, Organic and Natural Product Chemistry	S.D. Sarker, L. Nahar	John Wiley & Sons Ltd	2007	978-0-470- 01780-7
Organic Chemistry with a biological emphasis	Tim Sodeberg	ChemWiki UC Davis	2012	Open access

http://chemwiki.ucdavis.edu/Organic_Chemistry/Organic_Chemistry_With_a_Biological_Emphasis