



General information	
Academic subject	ORGANIC CHEMISTRY I
Degree course	CTF
Year of study	II
European Credit Transfer and Accumulation System (ECTS)	10
Language	Italian
Academic Year	2021-2022
Academic calendar (starting and ending date)	20 September 2021 – 21 January 2022
Attendance	Compulsory attendance

Professor/ Lecturer	
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Department and address	Dipartimento di Farmacia-Scienze del Farmaco, Via E. Orabona 4, Bari 3° floor; room n. 406
Virtual headquarters	Teams code: 03cbany
Tutoring (time and day)	Monday: 14:00–16:00 (in person)

Syllabus	
Learning Objectives	Knowledge of the most common classes of organic compounds, their synthesis and reactivity. Knowledge of the most important reaction mechanisms, and of the most representative classes of biorganic molecules.
Course prerequisites	Basic skills of General and Inorganic Chemistry
Contents	Credit 1. Molecular structure of organic compounds. Molecular geometries, covalent and polar bonds. Resonance. Intermolecular interactions and physicochemical properties of the most common classes of organic compounds. Alkanes and cycloalkanes. Credit 2. Traditional and IUPAC nomenclature of the main classes of organic compounds. Functional groups and classification of organic compounds. Aromatic, antiaromatic, and heteroaromatic compounds. Credit 3. Chirality and stereoisomers. Credit 4. Acidity and basicity in Organic Chemistry. Oxidation and reduction in Organic Chemistry. Radical reactions. Credits 5–7. Reactions of the main classes of organic compounds, and study and description of main organic reaction mechanisms. Organic synthesis. Credit 8. Organometallic compounds, amines, and reactivity of carboxylic acid derivatives. Credit 9. Aromatic compounds: structure, nomenclature, S_EAr e S_NAr mechanisms, and their application to organic synthesis. Credit 10. Chemistry and structure of carbohydrates: mono-, di-, and polysaccharides. O- and N-glycosides. Nucleic acids. Chemistry and structure of amino acids and proteins. Chemistry and structure of the most common classes of lipids. Soaps and detergents.
Books and bibliography	- Main texts 1) T. W. GRAHAM SOLOMONS, CRAIG B. FRYHLE <i>Chimica Organica</i> , Zanichelli, 2008 ; 2) M. LOUDON <i>Chimica Organica</i> , Edises, 2010 ; 3) B. BOTTA <i>Chimica Organica</i> , Edi-Ermes, 2nd edition, 2016 ; 4) PAULA YURKANIS BRUICE, <i>Chimica Organica</i> , Edises s.r.l., 3rd edition, 2017 ; 5) W. H. BROWN, B. L. IVERSON, E. V. ANSLIN, C. S. FOOTE, <i>Chimica Organica</i> , Edises, Napoli, sixth edition, 2019 .



	Exercise books: 1) T. W. GRAHAM SOLOMONS, C. B. FRYHLE, R. G. JOHNSON <i>La Chimica Organica Attraverso gli Esercizi</i> , (2nd edition), Zanichelli, 2010 . 2) F. NICOTRA, L. CIPOLLA <i>Eserciziario di Chimica Organica</i> , Edises, 2013 .;3) N. E. Schore, K. C. Vollhardt, <i>Esercizi Risolti di Chimica Organica</i> , Zanichelli, 2016 ; 4) M. V. D'AURIA, O. T. SCAFATI, A. ZAMPELLA <i>Guida Ragionata allo Svolgimento di Esercizi di Chimica Organica (5th edition)</i> , Loghia, 2020 .
Additional materials	<ul style="list-style-type: none">• https://www.edisesuniversita.it/default/chimica-organica-2309.html• https://www.edisesuniversita.it/area_scientifica/catalogo/chimica-e-biochimica/chimica-organica-2348/brown-foote-chimica-organica.html

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
250	100	–	150
ECTS			
	10		

Teaching strategy	<i>A blended learning strategy is adopted through the TEAMS platform, with the main teaching contents (molecular structures, reaction schemes and discussion of mechanisms) accomplished on the blackboard, and integrated with PowerPoint presentations. In order to improve the effectiveness of teaching and learning by students, the didactic material and several exercises are also made available to students by sharing them on the TEAMS platform.</i>
Expected learning outcomes	
Knowledge and understanding on:	<ul style="list-style-type: none">○ Acquisition of the basic theoretical principles to understand the structure and the reactivity of the most common classes of organic compounds
Applying knowledge and understanding on:	<ul style="list-style-type: none">○ Application of the basic theoretical principles to study the structure and the reactivity of the most common classes of organic compounds
Soft skills	<ul style="list-style-type: none">• <i>Making informed judgments and choices</i><ul style="list-style-type: none">○ Acquisition of the ability to propose either simple synthetic strategies for the preparation of chemical compounds or simple reaction mechanisms○ Ability to predict the physicochemical properties and the chemical reactivity of organic molecules from their molecular structures• <i>Communicating knowledge and understanding</i><ul style="list-style-type: none">○ Acquisition of the skills and the language necessary for the description of molecular entities and their reactions• <i>Capacities to continue learning</i><ul style="list-style-type: none">○ Acquisition of the basic skills necessary to understand the principles of advanced courses of Organic Chemistry, to study important biological organic molecules, and to perform the drug synthesis

Assessment and feedback	
Methods of assessment	<i>The assessment consists in a preliminary written text, then integrated by an oral interview. The final evaluation is expressed in thirties, including a honour. All attending students are also allowed to run a written text either at half or at the end of the course, followed by an oral interview, with the final evaluation expressed in thirties, including a honour.</i>
Evaluation criteria	<ul style="list-style-type: none">• Knowledge and understanding



	<ul style="list-style-type: none">○ Basic knowledge of the principles of Organic Chemistry, of organic compounds and their reactivity• <i>Applying knowledge and understanding</i><ul style="list-style-type: none">○ Exercises on the nomenclature, stereochemistry and synthesis of organic compounds, and on the reactivity and transformation of the most common functional groups• <i>Autonomy of judgment</i><ul style="list-style-type: none">○ Predict the reactivity of organic molecules from their molecular structures.• <i>Communicating knowledge and understanding</i><ul style="list-style-type: none">○ Usage of scientifically correct terminologies in Organic Chemistry• <i>Communication skills</i><ul style="list-style-type: none">○ Clarity of exposition• <i>Capacities to continue learning</i><ul style="list-style-type: none">○ Acquisition of the basic knowledge of Organic Chemistry, which are propaedeutic for the study of Biochemistry and Medicinal Chemistry
Criteria for assessment and attribution of the final mark	<i>Interactive discussion with students about the correctness of home exercises. Regular examination of homework exercises. Bonus of additional 3 points to the attending students able to pass both the written examinations at half and at the end of the course, and the final oral interview.</i>
Additional information	