

**COURSE OF STUDY** *Bachelor degree: Food Science and Technology (L26)*
**ACADEMIC YEAR** *2023-2024*
**ACADEMIC SUBJECT** *Organic Chemistry (3 ECTS) - I.C. Chemistry (9 ECTS)*

General Information	
Year of the course	First
Academic calendar (starting and ending date)	First semester (October 9 <sup>th</sup> , 2023 –January 26 <sup>th</sup> , 2024)
Crediti formativi universitari (CFU/ECTS):	3
SSD	<i>CHIM/06 – Organic Chemistry</i>
Language	<i>Italian</i>
Mode of attendance	<i>No compulsory</i>

Professor/Lecturer	
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Department and address	<i>DIP. DISSPA – Università degli Studi di Bari</i>
Virtual room	<i>Microsoft Teams: 0ac9vw3</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	Monday on appointment

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
75	16	14	45
CFU/ETCS			
3	2	1	
<b>Learning Objectives</b>		The main objective of the course is to provide the student with the basic knowledge on the structure and properties of the principal organic compounds and molecules of biological interest, towards applications to food chemistry.	
<b>Course prerequisites</b>			
<b>Teaching strategy</b>		Course contents will be presented through PowerPoint, blackboard and multimedia tools.	
<b>Expected learning outcomes</b>		<b>Knowledge and understanding on:</b> <ul style="list-style-type: none"> <li>Basic knowledge of the structure, properties and reactivity of the main classes of organic molecules of relevance in food science; understanding the relationship between chemical structure and reactivity useful to the interpretation of biological and technological processes of food transformation</li> </ul> <b>Applied knowledge and understanding on:</b>	
<b>Knowledge and understanding</b>			
<b>Applied knowledge and understanding</b>			

<b>Soft skills</b>	<ul style="list-style-type: none"> <li>Ability to utilize chemical knowledge to understand and apply correctly transformation, storage and distribution procedures related to food and beverage</li> </ul> <p><b>Making informed judgments and choices:</b></p> <ul style="list-style-type: none"> <li>Awareness and autonomy of judgment in using chemical knowledge in the subsequent courses</li> </ul> <p><b>Communicating knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>Ability to name and describe the structure, properties and reactivity of the main classes of organic molecules of biological and food interest</li> </ul> <p><b>Capacities to continue learning :</b></p> <ul style="list-style-type: none"> <li>Ability to deepen and update the knowledge about the chemical and chemical-physical processes in the agri-food sector</li> </ul>
<b>Content knowledge</b>	<p>Representing organic molecules; resonance structures.</p> <p><b>Alkanes:</b> structure, isomerism, nomenclature, properties, reactivity; cycloalkanes: structure, conformations, cis-trans isomerism, nomenclature.</p> <p><b>Alkenes:</b> structure, isomerism, nomenclature, properties, reactivity: electrophilic addition; polyenes.</p> <p><b>Alkynes:</b> structure, nomenclature.</p> <p><b>Stereoisomery and Enantiomery.</b></p> <p><b>Aromatic compounds:</b> structure, nomenclature, properties, reactivity: electrophilic aromatic substitution; benzene and its derivatives; polycyclic aromatic hydrocarbons; heterocyclic aromatic compounds.</p> <p><b>Alcohols, thiols, phenols, ethers:</b> structure, nomenclature, properties.</p> <p><b>Amines:</b> structure, nomenclature, properties.</p> <p><b>Carbonyl compounds (aldehydes, ketones, carboxylic acids, acyl halides, esters, amides, anhydrides):</b> structure, nomenclature, properties, reactivity.</p>
<b>Texts and readings</b>	<ul style="list-style-type: none"> <li>W.H. Brown, T. Poon, Introduction to Organic Chemistry, 6th edition, John Wiley and Sons Inc.</li> </ul>
<b>Notes, additional materials</b>	Notes, slides and other bibliographic materials will be furnished during the course
<b>Repository</b>	All the teaching material will be made available through the Microsoft Team class specifically created for the course.
<b>Assessment</b>	
Assessments methods	<p>The exam consists of a written test and an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom, as reported in the Academic Regulations for the Bachelor Degree in Food Science and Technology (article 9) and in the study plan (Annex A). Students attending the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation.</p> <p>The evaluation of the preparation of the student occurs on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor's degree in food science and Technology.</p>

Assessment criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>• Knowledge of the structure of the main classes of organic molecules and of their properties and reactivity</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>• Understanding the basic principles of organic chemistry for applications in food science</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>• Making correct hypotheses on the products, energy and kinetics of chemical processes involving organic molecules</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>• Describing the structure and properties of the main organic molecules of biological and food relevance</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>• Ability to understand phenomena related to the transformation and conservation of food</li> </ul>
Final exam and grading criteria	The evaluation criteria that contribute to the attribution of the final mark will be: knowledge and understanding, the ability to apply knowledge, autonomy of judgment, i.e. the ability to criticize and formulate judgments, communication skills.
<b>Additional information</b>	