



General information	
Academic subject	<b>Organic Chemistry 2</b>
Degree course	CTF
Year of study	3°
European Credit Transfer and Accumulation System (ECTS)	8
Language	Italian
Academic Year	2021-22
Academic calendar (starting and ending date)	1° semester
Attendance	Compulsory attendance

Professor/ Lecturer	
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Department and address	Department of Pharmacy - Pharmaceutical Sciences
Virtual headquarters	Teams
Tutoring (time and day)	Monday and Wednesday 9.30-11.30 (or by appointment via e-mail)

Syllabus	
Learning Objectives	
Course prerequisites	Basic skills of Organic Chemistry I
Contents	<b>Credit 1.</b> Retrosynthetic analysis by making a disconnection and functional group interconversion. Protective groups. Chemo-, regio- and stereoselectivity. Asymmetric synthesis. <b>Credit 2.</b> Chemistry of radicals. Synthesis and reactions of carbenes. <b>Credit 3.</b> Determining reaction mechanisms. <b>Credits 4–5.</b> Pericyclic reactions: electrocyclic, cycloaddition and sigmatropic reactions. Rearrangements. Organocatalysis. <b>Credit 6.</b> Chemistry of organosulfur, organophosphorus and organosilicon compounds. <b>Credit 7.</b> Heteroaromatic compounds: classification, properties, synthesis and reactivity. Saturated heterocycles and stereoelectronics. <b>Credit 8.</b> Chemistry of transition-metal compounds. Transition-metal-catalyzed C–C and C–N bond forming reactions.
Books and bibliography	- <b>Main texts</b> 1) CLAYDEN, GREEVES, WARREN, <i>Organic Chemistry</i> , 2nd Edition, Oxford, <b>2012</b> ; 2) P. WYATT, S. WARREN, <i>Organic Chemistry – Strategy and Control</i> , Wiley, <b>2007</b> ; 3) J. A. JOULE, K. MILLS <i>Heterocyclic Chemistry</i> , 5 <sup>th</sup> Edition, Wiley, <b>2010</b> ; 4) G. BROGGINI, G. ZECCHI, <i>Chimica dei Composti Eterociclici</i> , Zanichelli, <b>2017</b> . <b>Exercise books:</b> 1) WARREN, <i>Solution Manual to Accompany Organic Chemistry</i> , Oxford, <b>2001</b> ; 2) WARREN, WYATT, <i>Organic Synthesis, The Disconnection Approach</i> , 2 <sup>nd</sup> Edition, Wiley, <b>2008</b> ; 3) WARREN, WYATT, <i>Workbook for Organic Synthesis – The Disconnection Approach</i> , Wiley, <b>2009</b> .
Additional materials	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours



Hours			
200	80		120
ECTS			
8	8		
Teaching strategy		Teaching contents (molecular structures, reaction schemes and discussion of mechanisms) are completely carried over to blackboard. 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.	
Expected learning outcomes			
Knowledge and understanding on:		Advanced knowledge of the principles of Organic Chemistry aimed at suggesting complex synthetic strategies and reaction mechanisms	
Applying knowledge and understanding on:		Student's ability to perform exercises on the synthesis and reactivity of functionalized organic molecules, and on reaction mechanisms	
Soft skills		<ul style="list-style-type: none"><li>• <i>Making informed judgments and choices</i><ul style="list-style-type: none"><li>○ Predict autonomously the synthesis and the reactivity of organic compounds from a given molecular structure</li></ul></li><li>• <i>Communicating knowledge and understanding</i><ul style="list-style-type: none"><li>○ Usage of scientifically correct terminologies in Organic Chemistry</li></ul></li><li>• <i>Capacities to continue learning</i><ul style="list-style-type: none"><li>○ Acquisition of advanced knowledge of Organic Chemistry, which are propaedeutic for the study of Medicinal Chemistry and for the synthesis of pharmaceutically relevant compounds</li></ul></li></ul>	
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</i>	
Evaluation criteria		<ul style="list-style-type: none"><li>• <i>Knowledge and understanding</i><ul style="list-style-type: none"><li>○ Advanced knowledge of the principles of Organic Chemistry aimed at suggesting complex synthetic strategies and reaction mechanisms</li></ul></li><li>• <i>Applying knowledge and understanding</i><ul style="list-style-type: none"><li>○ Student's ability to perform exercises on the synthesis and reactivity of functionalized organic molecules, and on reaction mechanisms</li></ul></li><li>• <i>Autonomy of judgment</i><ul style="list-style-type: none"><li>○ Predict autonomously the synthesis and the reactivity of organic compounds from a given molecular structure</li></ul></li><li>• <i>Communicating knowledge and understanding</i><ul style="list-style-type: none"><li>○ Usage of scientifically correct terminologies in Organic Chemistry</li></ul></li><li>• <i>Communication skills</i><ul style="list-style-type: none"><li>○ Clarity of exposition</li></ul></li><li>• <i>Capacities to continue learning</i><ul style="list-style-type: none"><li>○ Acquisition of advanced knowledge of Organic Chemistry, which are propaedeutic for the study of Medicinal Chemistry and for the synthesis of pharmaceutically relevant compounds</li></ul></li></ul>	
Criteria for assessment and attribution of the final mark		<i>The resolution of reactivity problems about organic compounds and the ability to clearly describe the reaction mechanisms will be a priority in evaluating student learning.</i>	
Additional information			