

General information	
Academic subject	Agricultural Industries (C.I. Technologies for Agro-Food Transformations)
Degree course	Agricultural Science and Technology
Academic Year	Third
European Credit Transfer and Accumulation System (ECTS)	6
Language	Italian
Academic calendar (starting and ending date)	March 1 th , 2022 – June 17 th , 2022
Attendance	No

Professor/ Lecturer	
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Department and address	Department of Soil, Plant and Food Science, University of Bari Aldo Moro, 70126 Bari, Italy
Virtual headquarters	Teams platform, access code vsgh84h
Tutoring (time and day)	Tuesday-Friday by previous agreement at the “Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti (DiSSPA)” or on Teams platform.

Syllabus	
Learning Objectives	The course aims to provide knowledge and skills in the transformation processes in the oenological, oil and dairy sectors, as well as to ensure, also using innovative and sustainable methodologies, the safety, quality and wholesomeness of foodstuffs.
Course prerequisites	Knowledge of chemistry and biochemistry
Contents	<p><u>Wine sector</u> Chemical and biochemical constituents of grapes. The ripening of grapes and the technological role of its components. Role of sulphur dioxide in oenology. Red winemaking. White winemaking. Vinification in rosé. Vinification with carbonic maceration. Intensity and clarity of the wine. Wine stabilization. Wine defects and alterations. Principles and methodologies of common analytical procedures for wine quality control. Quality analysis of wines.</p> <p><u>Olive oil sector</u> Classification of lipids. Fatty acids, triglycerides, minor saponifiable and unsaponifiable compounds. Lipid alteration: lipolysis and oxidation. Production process of virgin olive oils. Classic and innovative extraction systems. Oil rectification: degumming, deacidification, decolorization, deodorization, winterizing. Principles and methodologies of common analytical procedures for the quality control of virgin oils. Quality analysis of olive oils.</p> <p><u>Dairy sector</u> The main components of milk: fat, protein and carbohydrates. The minor components of milk: vitamins, enzymes, citric acid, non-protein nitrogen, microorganisms and cellular elements. Acid and rennet coagulation. Processing of hard and pasta filata cheese. Cheese defects and alterations. Processing of ricotta, cream and butter. Drinking milk. Principles and methodologies of common analytical procedures for the quality control of milk. Quality analysis of dairy products.</p>

Books and bibliography	<ul style="list-style-type: none"> • Lecture notes and materials distributed during the course. • Ribéreau-Gayon P., Glories Y., Maujean A., Dubourdieu D. "Trattato di enologia I" e "Trattato di enologia II". Edagricole, Bologna, 2017-2018. • Lanati D. De Vino "Lezioni di enotecnologia". Edizioni AEB, 2007. • Capella P., Fedeli E., Bonaga G., Lerker G. "Il manuale degli oli e dei grassi". Tecniche Nuove, Milano, 1997. • Various authors. OLEUM "Manuale dell'olio da olive". Edagricole, Bologna, 2011. • Mucchetti G., Neviani E. "Microbiologia e tecnologia lattiero-casearia. Qualità e sicurezza". Tecniche Nuove, 2006.
Additional materials	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	32	28	90
ECTS			
6	4	2	
Teaching strategy	<p>The course topics will be treated with the help of Power Point presentations, case studies discussion, exercises in the classroom and laboratory, educational visits to sensory and instrumental analysis laboratories.</p> <p>Lecture notes and educational supplies will be provided by means of a mailing list or online platforms (i.e.: Teams, Edmodo, Google Drive...)</p>		
Expected learning outcomes			
Knowledge and understanding on:	<ul style="list-style-type: none"> ○ Knowledge and understanding of the composition and evolution of raw materials (grapes, olives and milk). 		
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ Ability to identify and apply with autonomy the appropriate processing technologies depending on the compositional characteristics of raw materials. ○ Ability to identify and carry out technological interventions to obtain a healthy and stable product over time. 		
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Ability to interpret the results of analytical controls of wines, olive oils and cheeses and to establish the most appropriate technological intervention for qualitative improvement. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to communicate the importance of raw material quality and of the rational application of technologies to obtain products of quality. ○ Ability to describe the impact of technological variables on the quality characteristics of end products, even to an inexpert public. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to update and deepen the knowledge of processing techniques through the study of scientific publications in the field of oenological, olive oil and dairy sectors. 		

Assessment and feedback	
Methods of assessment	The exam consists of an oral dissertation on the topics developed during the

	<p>theoretical and theoretical-practical lectures in the classroom and in the laboratory/production plants, as reported in the Academic Regulations for the bachelor's degree in food science and Technology (article 9) and in the study plan (Annex A).</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 Agricultural Science and Technology.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
<p>Evaluation criteria</p>	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ Describe the components of raw materials and their evolution during processing • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Describe the processes according to the raw materials and to the products required by the consumer. ○ Describe the impact of technological variables and of treatments on the quality and health characteristics of end products. • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ Interpret the results of chemical, physical and sensory analyses of food products and propose technological solutions for quality improvement. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Illustrate the layout of processes by reporting any critical points and quality control strategies. ○ Illustrate hypothetical processing technologies according to composition of the raw materials. • <i>Communication skills</i> <ul style="list-style-type: none"> ○ Describe the impact of technological variables on the quality characteristics of end products, even to an inexpert public. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to deepen and update independently the processing knowledge acquired.
<p>Criteria for assessment and attribution of the final mark</p>	<p>The oral examination consists of questions on the topics of the programmes of the two modules. Successful completion of the oral examination will lead to a final assessment, which will be expressed as the arithmetic mean of the oral examinations of the two modules. For students enrolled in the year of the course in which the course is taught, an oral exemption test will be held on the topics of the lectures and exercises carried out in the period preceding the test (approximately half the programme). The exemption test for the Agricultural Industries module is passed if the student shows: 1) at least sufficient preparation; 2) level of knowledge appropriate to the minimum level of the requirements; 3) sufficient mastery of the subject matter and acceptable language; 4) ability to analyse problems and structure arguments; 5) has also successfully passed the exemption test for the Agricultural Microbiology module. Successful exemption tests for both modules contribute to the assessment of the C.I. Tecnologie delle Trasformazioni dei Prodotti Agroalimentari exam and are valid for one academic year.</p> <p>For students who have passed the exoneration test, the final oral test will only cover the topics of lessons and exercises carried out in the period following the exoneration test. In this case, the evaluation of the final exam is expressed as the average of the marks obtained in the exoneration and the final exam.</p>
<p>Additional information</p>	