



General information	
Academic subject	Food Processing (I.C. Systems in the Agri-Food Industry)
Degree course	Sustainable Agriculture Techniques (TAS)
Academic Year	I year
European Credit Transfer and Accumulation System (ECTS)	3 ECTS
Language	Italian
Academic calendar (starting and ending date)	II semester (from 1 March to 17 June)
Attendance	No

Professor/ Lecturer	
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Virtual headquarters	Teams code: j1rqjiy
Tutoring (time and day)	Days, times, and methods determined by appointment by e-mail

Syllabus	
Learning Objectives	The course provides the basis for knowledge of raw materials (grapes, olives, and milk), transformation processes and management of waste.
Course prerequisites	Knowledge of chemistry and agricultural tree systems.
Contents	<p><u>Oenological Chain</u> Grape ripening and chemical composition. Role of sulphur dioxide in oenology. Vinification: red, white, rosé, and carbonic maceration. Stabilisation of wines. Defects and alterations in wines. Management of by-products (grape pomace and lees). Principles and methodologies of common analytical procedures for wine quality control.</p> <p><u>Olive oil Chain</u> Production process of virgin olive oils: from olives conferring to classical and innovative oil extraction systems. Composition and classification of virgin olive oils. Management of by-products (pomace and vegetation waters). Principles and methodologies of common analytical procedures for quality control of virgin olive oils.</p> <p><u>Dairy Chain</u> The main components of milk: fat, proteins, and carbohydrates. Minor components of milk. Acid and rennet coagulation of milk. Production process of hard and stretched-curd cheese. Whey management and valorisation. Principles and methodologies of common analytical procedures for milk quality control.</p>
Books and bibliography	<ul style="list-style-type: none">• Notes on lectures available for students.• Ribéreau-Gayon P., Glories Y., Maujean A., Dubourdieu D. "Trattato di enologia I" e "Trattato di enologia II". Edagricole, Bologna, 2003.• 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.• Autori vari. OLEUM "Manuale dell'olio da olive". Edagricole, Bologna, 2011. Salvadori del Prato O. "Trattato di tecnologia casearia". Calderini Edagricole, Bologna, 2001.
Additional materials	



Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
75	16	14	45
ECTS			
3	2	1	
Teaching strategy			
		Mixed teaching: the course topics will be covered with the aid of Power Point presentations, practical exercises in the laboratory and project work. The laboratory analyses will be carried out in full compliance with anti-Covid regulations.	
Expected learning outcomes			
Knowledge and understanding on:		<ul style="list-style-type: none"> ○ Knowledge of composition of raw materials (grape, olives, and milk). ○ Knowledge of production processes of wines, virgin olive oils and cheeses. 	
Applying knowledge and understanding on:		<ul style="list-style-type: none"> ○ Ability to identify and apply with autonomy the appropriate process 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 determine the most appropriate technological interventions to improve the quality of the product and valorise waste ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to communicate the importance of raw material quality and of the functional application of food processing to obtain high quality products. ○ Ability to describe the impact of technological variables on the quality characteristics of final product and waste, even to a non-specialist. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to update and deepen their knowledge of processing technologies and waste management in the wine, oil, and dairy sectors. 	

Assessment and feedback	
Methods of assessment	<p>The final exam, unique, total, and collegial, for the Systems in the Agri-Food Industry I.C., consists of an oral test on the topics of three modules ("Food Processing", "Principles of Technical Physics" and "Machinery and Equipment"). The marks are out of 30, as defined in the Didactic Regulations of the Bachelor in Techniques for Sustainable Agriculture.</p> <p>For students enrolled in the academic year of the course, there is an oral exemption test related to the topics of lessons and exercises conducted in the period preceding the test (about half the program). Examination for the Food Processing module is overcome if the student shows at least sufficient preparation, a level of knowledge appropriate to the minimum level of requirements, sufficient mastery of acceptable subject matter and language, and ability to analyse problems and structure of the arguments and has also successfully passed the exemption tests of the other two modules of the C.I. The positive outcomes of the exemption tests of the three modules contribute to the evaluation of Systems in the Agri-Food Industry I.C. and have the validity of one academic year.</p> <p>For students eligible for exoneration, the final oral exam will only cover the topics of lessons and exercises carried out during the period following the exemption test. In this case, the assessment of the final exam is expressed as the mean between the mark of the exemption and the final tests.</p> <p>For foreign students the exam can be done in English.</p>



Evaluation criteria	<ul style="list-style-type: none">• <i>Knowledge and understanding</i><ul style="list-style-type: none">○ Knowledge on raw materials composition and their evolution during food processing.• <i>Applying knowledge and understanding</i><ul style="list-style-type: none">○ Ability to describe food processing according to the raw materials and the final product as required by consumers.○ Ability to describe the impact of technological variables and treatments on by-products and waste characteristics.• <i>Autonomy of judgment</i><ul style="list-style-type: none">○ Based on the characteristics of the raw materials, propose technological process solutions to improve the quality of the finished products.• <i>Communicating knowledge and understanding</i><ul style="list-style-type: none">○ Illustrate the layout of the production processes, reporting any critical points and the control strategies.○ Illustrate hypothetical food processing capable of generating by-products and waste that are easier to exploit.• <i>Communication skills</i><ul style="list-style-type: none">○ Use appropriate scientific language, demonstrate varied vocabulary, and adapt their language to the audience, write clearly and concisely, work well in a group.• <i>Capacities to continue learning</i><ul style="list-style-type: none">○ Learning of this module occurs during lectures and laboratory exercises. Knowledge learning is also verified by the case studies proposed during course.
Criteria for assessment and attribution of the final mark	<p>The evaluation of the student's preparation is based on established criteria, as detailed in the Didactic Regulations of the Bachelor program.</p> <p>For the final exam, the oral test aims to evaluate the knowledge and skills obtained on the course of both modules. The positive outcome of the oral test will result in the final evaluation of the examination, which will be expressed as the arithmetic mean of the oral tests of the three modules. The final exam is passed with a mark of at least 18/30.</p>
Additional information	