

COURSE OF STUDY Agricultural Sciences and Technologies

ACADEMIC YEAR 2023-2024

NAME OF THE COURSE

Integrated Course: Food Science and technology (6 ECTS)

Module: Food Science and technology (3 ECTS)

General information	
Academic subject	AGR/15 FOOD SCIENCES AND TECHNOLOGIES
Degree course	Agricultural Sciences and Technologies
Academic Year	III year
European Credit Transfer and Accumulation System (ECTS)	3 ECTS: 2 ECTS Lessons + 1 ECTS Lab exercises
Language	ITALIAN
Academic calendar (starting and ending date)	II semester (01-03-24 - 15-06-24)
Attendance	optional

Professor/ Lecturer	
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Virtual headquarters	
Tutoring (time and day)	every day by appointment agreed via email

Syllabus	
Learning Objectives	Knowledge and skills in the Food Technology sector
Course prerequisites	Knowledge of principles of chemistry and biochemistry Knowledge of principles of microbiology
Contents	<p>Wine sector</p> <p>Chemical and biochemical constituents of grapes. Grape ripening and technological role of sugars, organic acids, polyphenols, pectic substances, nitrogenous substances, enzymes, vitamins and mineral substances. Role of enzymes, yeasts and sulfur dioxide in oenology. Vinification in red. Vinification in white. Vinification in rosé. Vinification with carbonic maceration.</p> <p>Cloudiness and clarity of the wine. Stabilization of wines. Wine defects and alterations.</p> <p>Principles and methodologies of common analytical procedures for wine quality control. Qualitative analysis of wines.</p> <p>Olive oil sector</p> <p>Lipid classification. Fatty acids, triglycerides, minor saponifiable and unsaponifiable compounds. Alteration of lipids: lipolysis and oxidation.</p>

	<p>Production process of virgin olive oils. Classic and innovative extraction systems.</p> <p>Rectification of oils: degumming, deacidification, discoloration, deodorization, demargarinization.</p> <p>Principles and methodologies of common analytical procedures for quality control of virgin oils.</p> <p>Dairy sector</p> <p>The main components of milk: fat, proteins and carbohydrates. The minor components of milk. Acid coagulation and rennet.</p> <p>Production process of hard and stretched curd cheese. Cheese defects and alterations. Production process of ricotta, cream and butter. Drinking milk.</p> <p>Principles and methodologies of common analytical procedures for milk quality control.</p>
Books and bibliography	<ul style="list-style-type: none"> • Lecture notes, teaching material distributed at the end of the course, scientific publications provided by the teacher. • Ottavio Salvadori del Prato Trattato di tecnologia lattierocasearia - Edizioni Agricole • Ribereau-Gayon, P., Dubourdieu, D., Donèche, B., Lonvaud, A. «Traité d'Œnologie. 1. Microbiologie du vin. Vinifications», ed. Dunod, Paris (1998); oppure l'equivalente testo in italiano edito da Edagricole, Bologna (2003). • Ribereau-Gayon, P., Glories, Y., Maujean, A., Dubourdieu, D. «Traité d'Œnologie. 2. Chimie du vin. Stabilisation et traitements», ed. Dunod, Paris (1998); oppure l'equivalente testo tradotto in italiano edito da Edagricole, Bologna (2003). • A. Ricci Oleum. Manuale dell'olio da olive - editore: IL SOLE 24 ORE EDAGRICOLE (2011)
Additional materials	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
30	16	14	
ECTS			
3	2	1	
Teaching strategy			
<p>Frontal lessons supported by the projection of images and films relating to the topics of study.</p> <p>Classroom exercises with discussion of case studies</p> <p>Educational visits (if possible, based on the number of students and the availability of funds)</p>			
Expected learning outcomes			
Knowledge and understanding on:	<p>Dublin Descriptor 1: Knowledge and understanding</p> <ul style="list-style-type: none"> o Knowledge and understanding of the technological and nutritional quality of foods 		

	<p>o Knowledge and understanding of food transformation processes Dublin 2 descriptor: ability to apply knowledge and understanding Ability to evaluate and interpret the correctness of a production process and the effects it has on food quality.</p>
Applying knowledge and understanding on:	<p>Dublin 3 descriptor: judgment and critical skills Ability to analyze information, ideas, problems and solutions through the development of case studies related to food technologies.</p>
Soft skills	<p>- Dublin 4 descriptor: ability to communicate what has been learned Ability to communicate at company level and to third parties the technical choices made regarding the maintenance of the quality of the various food products. - Dublin 5 descriptor: ability to continue learning autonomously throughout life Ability to deepen and update one's knowledge related to maintaining the quality of different food products</p>

Assessment and feedback	
Methods of assessment	<p>An exemption test is required for students enrolled in the year of the course in which the teaching is carried out. The exemption consists of an oral test on the topics developed during the hours of theoretical lessons and classroom exercises carried out up to the date of the exemption. The outcome of this test contributes to the assessment of the profit exam and is valid for one academic year. The evaluation of the students' progress is expressed with a vote out of thirty. The exemption test is passed with a vote of at least 18/30. The exam involves carrying out an exemption test according to the "Exemption diary, profit exams and Degree" to be completed at the end of the course with a written or oral test, or alternatively, a written or oral test on the topics developed during the hours of theoretical and theoretical-practical lessons in the classroom and in the laboratory. The test is passed with a vote of at least 18/30. The teacher reserves the right to assign each student a theme of the year to be carried out in writing and/or as a presentation at the end of the course. The assessment of the student's preparation takes place on the basis of pre-established criteria, as detailed in Annex A of the Degree Course Academic Regulations. For students who have taken the exemption test, the assessment of the exam is expressed as the average between the vote carried over to the exemption and to the profit exam.</p>
Evaluation criteria	<ul style="list-style-type: none"> • Knowledge and understanding Knowledge and understanding of the nutritional quality of foods demonstrate that a learning outcome has been achieved and at what level) Knowledge and understanding of food transformation processes • Applied knowledge and understanding o Ability to manage agro-food processing technologies • Communication skills o Ability to clearly communicate knowledge, solutions and problems to specialist and non-specialist audiences • Ability to learn o Ability to learn and desire to deepen in a self-directed and autonomous way The final mark is given out of thirty.
Criteria for assessment and attribution of the final mark	<p>The exam is considered passed when the grade is greater than or equal to 18/30</p>
Additional information	