

COURSE OF STUDY Agricultural Science and Technology

ACADEMIC YEAR 2023/2024

ACADEMIC SUBJECT Agricultural Industries 6 ECTS (C.I. Technologies for Agro-Food Transformations)

General information	
Academic subject	Food Industries
Degree course	<i>III</i>
Academic Year	<i>2023-2024</i>
European Credit Transfer and Accumulation System (ECTS)	6
Language	<i>Italian</i>
Academic calendar (starting and ending date)	<i>II Semester - (February 26, 2024- June 21, 2024)</i>
Attendance	<i>Not mandatory</i>

Professor/ Lecturer	
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Department and address	<i>Ground floor, dept. DISSPA – ex Agrarian Faculty room n. 8</i>
Virtual headquarters	<i>Microsoft teams</i>
Tutoring (time and day)	<i>Monday to Friday by appointment only.</i>

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 sulfur 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> 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,</p>

	cream, and butter. Drinking milk. Principles and methodologies of common analytical procedures for the quality control of milk. Quality analysis of dairy products.
Books and bibliography	P. Cabras, A. Martelli – Chimica degli alimenti. Piccin editore 2004; Conte L., Servili M. OLEUM "Qualità, tecnologia e sostenibilità degli oli da olive". Edagricole, Bologna, 2022.
Additional materials	Scientific Reviews and papers

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		<i>Course topics are addressed with the aid of Power Point presentations and case study analysis. The methods for the determination of the food quality will be performed through laboratory activities.</i>	
Expected learning outcomes			
Knowledge and understanding on:		<ul style="list-style-type: none"> ○ Knowledge of the technological process of the foods and beverages and ability to understand the technological steps that are influent on the quality characteristics. ○ Knowledge of the analytical methods applied for the determination of the quality characteristics of the foods. 	
Applying knowledge and understanding on:		<ul style="list-style-type: none"> ○ Ability to define the technological parameters and the effect on the composition, structure and properties of the foods. ○ Ability to apply the analytical procedures for the assessment of the quality parameters of the preserved foods 	
Soft skills		<ul style="list-style-type: none"> • Making informed judgments and choices: <ul style="list-style-type: none"> ○ Ability to choose the technological solutions able to produce high quality foods and beverages. ○ Ability to choose the analytical procedures and methods able to assess the quality parameters of the foods. • Communicating knowledge and understanding: <ul style="list-style-type: none"> ○ Ability to describe the technological processes and the process parameters to produce the main foods. ○ Ability to describe the analytical procedures and methods able to assess the quality parameters of the foods. • Capacities to continue learning: <ul style="list-style-type: none"> ○ Ability to deepen and upgrade their skills respect to the technological process on the main foods and beverages and the legal aspect related to the commercialization. 	

Assessment and feedback	
Methods of assessment	The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in practical

	<p>activities (laboratory and educational visits). Students 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 and will be considered valid for one academic year. The result of the mid-term exam is communicated by publication in the student's electronic register and contributes to the assessment of the profit examination by means of calculation of the weighted average. The exam for foreign students may be conducted in English as described above.</p>
<p>Evaluation criteria</p>	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ Describe the technological process of the main foods and beverages. ○ Describe the legal aspects linked to the commercialization and labelling of the main foods. ○ Describe and apply the analytical methods for the determination of the quality characteristics of the preserved foods. • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Describe the influence of the technological parameters on the composition, structure and properties of the foods. ○ Describe the strategies needed for the set-up of the technological process of the main foods and beverages. • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ Make reasonable hypothesis to modulate the technological parameters to produce high quality foods and beverages. ○ Make reasonable hypothesis to choose the analytical procedures and methods able to assess the quality parameters of the foods. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Describe the technological processes and the process parameters to produce the main foods and beverages. ○ Describe the analytical procedures and methods able to assess the quality parameters of the foods. • <i>Communication skills</i> <ul style="list-style-type: none"> ○ The student will be evaluated considering the use of appropriate technical language. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Describe of the methods to deepen and upgrade their skills respect to the technological process on the main foods and beverages and the legal aspect related to the commercialization
<p>Criteria for assessment and attribution of the final mark</p>	<p>The assessment of the student's preparation is based on predetermined criteria in accordance with the Didactic Regulations of the Degree Course in Agricultural Science and Technology. The Examination Committee has a score ranging from a minimum of 18 to a maximum of 30 points for a positive assessment of the student's performance. By unanimous vote of its members, the Board may award honours in cases where the final mark is 30.</p>
<p>Additional information</p>	