

General information	
Academic subject	Innovative technologies in food processing (6 CFU) (I.C. Innovative technologies in food processing integrated with Methods of food analysis - 9 CFU)
Degree course	<i>Biotechnologies for Food Quality and Safety (LM-7)</i>
Academic Year	2021-2022
European Credit Transfer and Accumulation System (ECTS)	6 ECTS
Language	Italian
Academic calendar (starting and ending date)	
Attendance	No Compulsory

Professor/ Lecturer	
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Department and address	<i>Dept. DISSPA</i>
Virtual headquarters	<i>Microsoft Teams</i>
Tutoring (time and day)	Monday-Friday 9.00-18.00

Syllabus	
Learning Objectives	The student will acquire knowledge and skills on the innovative food technologies, including the packaging operations, aimed at the preservation of nutritional and sensory value of foods. The student will also acquire skills in the application of the biotechnology in food processing.
Course prerequisites	Knowledge of physics, inorganic and organic chemistry. Knowledge of the principles of food technologies and of the composition and quality of food.
Contents	Recalls of food technology: processes, products, balances. Process innovation: definition and objectives. Innovation in the food processing concerning the separation (revers and forward separation, air-classification) stabilization (thermal and mild) and packaging (intelligent and active packaging, bio-based polymers) operation. Product innovation for new eating styles. Innovative technologies for the enhancement of agro-food waste and by-products: extraction of compounds of interest, characteristics and use in the food industry. Application of biotechnology approaches in food science: the biotechnology in the oil, wine, beer, and meat-based product chains.
Books and bibliography	<i>Gigliotti, Verga: Biotechnologie Alimentari – Piccin-Nuova Libreria, 2007</i>
Additional materials	<i>Notes, slides, and other bibliographic materials will be furnished during the course</i>

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	40	12	98
ECTS			
6	5	1	
Teaching strategy		<i>All the topics will be treated through Power Point presentations, videos and laboratory exercitations. on-line platforms such as Microsoft teams, google drive, mailing list of students to provide didactic materials and to interact with the</i>	

	<i>students will be moreover used.</i>
Expected learning outcomes	<i>The student will acquire knowledge and skills on the innovative food technologies, including the packaging, aimed at the preservation of nutritional and sensory value of food, including the packaging operations. The student will also acquire skills in the application of the biotechnology in food science and production.</i>
Knowledge and understanding on:	<ul style="list-style-type: none"> ○ Student will know and understand the product and process innovations in the food industry, concerning in particular the separation, stabilization and packaging operations. ○ Student will know and understand the possibility for the application of biotechnological processes in food chain and the effect on the quality of food and the environmental aspects.
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ The student will apply knowledge for the use of innovative techniques in food processing. ○ The student will apply knowledge concerning the application of biotechnological approaches in the food production.
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ The student will be able to identify the aspects underlying the new problems of food production and bring them back to acquired schemes or propose innovative solutions. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student will acquire adequate skills and communication tools to analyse, propose and critically discuss experimental data relating to new processes and food products with interlocutors with similar and different backgrounds. <ul style="list-style-type: none"> ○ The students will acquire adequate skills and communication tools to analyse, propose and critically discuss the possible application of the biotechnological tools in food production. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ The students will acquire skills to deepen and update their knowledge related to the topics of the course also through efficient bibliographic research using the database such as Scopus and google scholar.

Assessment and feedback	
Methods of assessment	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory/production plants, as reported in the Academic Regulations for the Bachelor Degree Biotechnologies for Food Quality and Safety. Students attending at the lectures 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 a year.</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 Degree in Biotechnologies for Food Quality and Safety.</p>
Evaluation criteria	<ul style="list-style-type: none"> • Knowledge and understanding <ul style="list-style-type: none"> ○ The student will be able to know and understand the innovation in food processing and the impact on food quality, the new eating habits and the possibility to recover waste and by-products in a circular economy perspective. ○ The student will also know the importance and the possibility to apply the biotechnological tools in food chains and the impact on food quality. <p>Applying knowledge and understanding</p> <ul style="list-style-type: none"> ○ The students will be able to define the technological and biotechnological



	<p>parameters of the food process and to understand the effect on the composition, texture and properties of foods.</p> <ul style="list-style-type: none">• Autonomy of judgment<ul style="list-style-type: none">○ The student will be able to choose the best technological and biotechnological solutions able to produce foods and beverage and to evaluate the effect on the food quality, environmental and new eating style.• Communicating knowledge and understanding<ul style="list-style-type: none">○ The student will acquire communication skills and tools to analyse and discuss analytical data related to new process and products.• Communication skills<ul style="list-style-type: none">○ The student will be evaluated considering the use of appropriate technical language currently applied in the food sector.• Capacities to continue learning<ul style="list-style-type: none">○ The students will be also evaluated considering the capacity to deepen and update their knowledge within the topics of the course also through efficient bibliographic research using bibliographic platforms such as scopus and google scholar.
Criteria for assessment and attribution of the final mark	The evaluation criteria that contribute to the attribution of the final mark will be: knowledge and understanding, the ability to apply knowledge, autonomy of judgment, i.e. the ability to criticize and formulate judgments, communication skills
Additional information	