

COURSE OF STUDY *Bachelor degree: Food Science and Technology (L26)*
ACADEMIC YEAR *2023-2024*
ACADEMIC SUBJECT *Technology of Milk and Dairy Products (5 ECTS) - I.C. Oil and dairy products technology (9 ECTS)*

General information	
Year of the course	<i>II year</i>
Academic calendar (starting and ending date)	<i>I semester (25 September 2023 - 19 January 2024)</i>
Credits (CFU/ETCS):	<i>5</i>
SSD	<i>Food Science and Technology - F01-AGR/15</i>
Language	<i>Italian</i>
Mode of attendance	<i>Optional</i>

Professor/ Lecturer	
Name and Surname	<i>Michele Faccia</i>
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Department and address	<i>DISSPA – Campus Via Amendola 165/A Bari</i>
Virtual room	<i>Microsoft teams</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	<i>Monday-Friday 9.00-16.00 by appointment</i>

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<i>125</i>	<i>32</i>	<i>14</i>	<i>79</i>
CFU/ETCS			
<i>5</i>	<i>4</i>	<i>1</i>	

Learning Objectives	<i>The course supplies technical information about milk, dairy processing technologies, dairy products, chemical and sensory analyses useful in the field</i>
Course prerequisites	<i>Knowledge of “Chemistry” and “Unit operations of food technologies”.</i>

Teaching strategie	<i>Lectures will be presented through PC assisted tools (PowerPoint presentations and video). Field and laboratory classes, reading of regulations, educational tour in dairy farm and/or industrial dairy are also provided. Lecture notes and educational supplies will be provided by means of online platforms</i>
Expected learning outcomes in terms of	
Knowledge and understanding on:	<ul style="list-style-type: none"> <i>Knowledge of the composition of milk and of the physical-chemical and biochemical principles on which the processing technologies are based; this information is necessary for correctly understanding how the milk products are made</i> <i>Knowledge about food quality and safety; this information is</i>

	<i>necessary to understand the characteristics of milk and dairy products</i>
Applying knowledge and understanding on:	<ul style="list-style-type: none"> • <i>Connection between the quality and safety characteristics of dairy products and the processing parameters</i> • <i>Knowledge of the basic analytical techniques to measure the parameters of typicality, quality and safety of milk and dairy products</i> • <i>Capacity of choosing the suitable processing technologies for valorizing milk, included knowledge about the use of adjuvants, additives and starters</i>
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <i>At the end of the course the student will be able to</i> <ul style="list-style-type: none"> ○ <i>Judge the quality of milk and dairy products, based on the information from the frontal lessons and practical classes in the lab</i> ○ <i>Judge the overall processing scheme adopted in a dairy, based on the information from the frontal lessons and study visit</i> ○ <i>Judge the correct management of wastes and by-products, based on the information from the frontal lessons and study visit</i> • <i>Communicating knowledge and understanding</i> <i>At the end of the course the student will be able to</i> <ul style="list-style-type: none"> ○ <i>Communicate with technical language the quality and safety characteristics of milk and dairy products</i> ○ <i>Communicate with technical language the main principles and problems connected with dairy processing</i> • <i>Capacities to continue learning</i> <i>At the end of the course the student will be able to</i> <ul style="list-style-type: none"> ○ <i>Deepening and updating his/her knowledge on processes, products and technical instruments useful for the quality control in the dairy field, as well as on the regulation of the sector on quality and safety</i>
Syllabus	
Content knowledge	<p>Raw matter <i>Milk production at national and international level; chemical composition of milk; physical-chemical properties; microorganisms involved in the dairy processes; basic regulations for milk and milk processing</i></p> <p>Dairy industry <i>Importance of the dairy industry at national and international level; general information; production technology, legislation and quality of bottled milk. Cheesemaking (general part): milk coagulation, use of starters, in-vat and out-of-vat operations, storing and ripening of cheese. Cheese defects. Other dairy products: production of milk cream, butter and ricotta. Cheesemaking (second part): cheese classification. Technology of pasta filata cheeses. PDO and PGI Apulian cheeses. Case study: PDO Mozzarella of Gioia del Colle and PGI Burrata of Andria</i></p> <p>Management of dairy wastes and by-products <i>Technological characteristics and composition, environmental impact, legislation and technologies for waste disposal or valorisation.</i></p> <p>Milk from minor animal species <i>Goat, sheep, and waterbuffalo milk and related cheesemaking technologies</i></p> <p><i>Esercitazioni</i></p>

	Practical classes <i>Coagulation of milk by acidification and addition of rennet; analyses of milk and cheese macro constituents; cheese sensory analysis; main frauds in the sector. Educational tour in dairy farm and/or industrial dairy</i>
Texts and readings	<i>Milk and Dairy Product Technology - Edgar Spreer · 2017, Springer;</i>
Notes, additional materials	<i>Notes and slides help the students to prepare the exams and integrate the information of the suggested book</i>
Repository	<i>Available on Teams class</i>

Assessment	
Assessment methods	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 in Food Science and Technology. 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. The evaluation of the preparation of the student occurs based on established criteria, as detailed in the Academic Regulations for the Bachelor Degree in Food Science and Technology. Non-Italian students may be examined in English language, according to the previously mentioned procedures.
Assessment criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding: knowledge of all the technical information provided in the course</i> • <i>Applied knowledge and understanding: knowing the interactions between raw materials, microorganisms and technological treatments during the different processes of the dairy industry</i> • <i>Making judgements: being able to formulate reasonable hypotheses to evaluate the characteristics and quality of raw materials, processes and products</i> • <i>Communication skills: knowing how to correctly describe the contents of the course in technical language</i> • <i>Ability to learn: knowing how to use the acquired knowledge to explain phenomena encountered in one's own personal experience and to judge the correctness of information relating to the sector provided by the mass media or other communication means</i>
Final exam and grading criteria	<i>The final vote is given out of thirty and the exam is considered passed when the vote is greater than or equal to 18. The questions concern exclusively the contents provided during the course. Particularly rewarding during the test are the use of adequate technical language and the ability to make connections between topics.</i>
Further information	
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