

General information		
Academic subject	Microbiology of fermented foods	
Degree course	Food Science and Technology (L26)	
Academic Year	<i>Third</i>	
European Credit Transfer and Accumulation System (ECTS)		6 ECTS
Language	<i>Italian</i>	
Academic calendar (starting and ending date)	<i>September 26th, 2022 – January 20th, 2023</i>	
Attendance	<i>No Compulsory</i>	

Professor/ Lecturer	
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Department and address	<i>Department DISSPA – University of Bari</i>
Virtual headquarters	<i>Microsoft teams</i>
Tutoring (time and day)	<i>Tuesday-Wednesday 6.00 p.m. upon appointment by e-mail</i>

Syllabus	
Learning Objectives	
Course prerequisites	<i>Prerequisites: C.I. Biology and Ecophysiology of food-related microorganisms</i>
Contents	<ol style="list-style-type: none"> <i>1. Lactic acid bacteria ecophysiology and metabolism</i> <i>2. Microbiology of yogurt, cheeses, leavened baked goods, fermented vegetables, and fermented meat products</i> <i>3. Probiotics</i> <i>4. Yeasts and oenological microbiology</i> <i>5. Microbiology of wine, sparkling wines, beer</i>
Books and bibliography	<ul style="list-style-type: none"> <i>o Lectures notes</i> <i>o Cocolin, Gobbetti, Neviani. Microbiologia alimentare applicata. Zanichelli, 2022.</i> <i>Farris, Gobbetti, Neviani, Vincenzini. Microbiologia dei prodotti alimentari, Casa Editrice Ambrosiana (2012);</i> <i>o Biavati B. e C. Sorlini. Microbiologia Generale e Agraria. Casa Editrice Ambrosiana. 2007</i> <i>o Madigan, M.T., J.M. Martino e J. Parker. Brock. Biologia dei Microrganismi (traduzione italiana della 10a edizione di Brock Biology of Microrganisms), 2003.</i> <i>o Jay, J.M. Modern Food Microbiology. 5.a ed. London: Chapman & Hall International Thomson Publishing (1997).</i> <i>o I pani tipici. Biotecnologia dei prodotti lievitati da forno. p. 263-283, MILANO: Casa Editrice Ambrosiana, ISBN/ISSN: 978-88-08-18121-3.</i> <i>o De Felip, G. Recenti Sviluppi di Igiene e Microbiologia degli Alimenti. Milano: Tecniche Nuove (2001).</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	32	28	90
ECTS			
6	4	2	
Teaching strategy	Topics will be discussed through: <ul style="list-style-type: none"> ○ lessons that discuss the teaching material and data presented with the help of PowerPoint. ○ Laboratory lessons Guided tours at agri-food companies. <i>Lecture notes and educational supplies will be provided by means of online platforms</i>		
Expected learning outcomes	The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)		
Knowledge and understanding on:	Knowledge of the role of microorganisms in the fermentation of raw materials of plant and animal origin and of the microbial ecology of the main fermented foods		
Applying knowledge and understanding on:	Ability to autonomously identify suitable biotechnologies for processing, hygiene and food safety to be applied to production processes and agri-food products Ability to identify and carry out biotechnological interventions aimed at obtaining appropriate qualitative (organoleptic, technological, hygienic, and nutritional) standards of fermented food products		
Soft skills	<ul style="list-style-type: none"> ● <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Ability to interpret the results of analytical controls and to adjust the parameters of fermentation processes to the achievement of defined quality standards ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to communicate the importance and role of microorganisms and the purpose of biotechnological processes for the control and processing of raw materials in foods, to obtain specific quality standards ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ ability to update and deepen self-knowledge of food biotechnological processes through the study of scientific publications in the microbiological field, with particular focus to applications in oenology, dairy and leavened baked goods 		
The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification).			

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 the laboratory, as reported in the Academic Regulations for the Bachelor Degree in Food Science and Technology (article 9) and in the study plan (Annex A). 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 on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor's degree in food science and Technology.

	The foreign student's profit test can be done in English in the way described above.
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Knowledge of the growth and control parameters of microorganisms and the main biotechnological processes to produce fermented foods <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Ability to describe, select and manage the growth of microorganisms and the main biotechnological processes to produce fermented foods <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Understand, select, and manage the major biotechnological processes to produce fermented foods by analyzing biochemical, microbiological and process parameters <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Describe the layout of biotechnological processes by identifying critical points and the most appropriate management strategies ○ Describe hypothetical biotechnological processes according to the compositional characteristics of the raw material and the desired characteristics for the finished product <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Gaining knowledge of this module is verified during lectures, practical lessons and guided tours. It is also verified through the case studies proposed during learning activities
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	