

General Information	
Academic subject	Food Microbiology
Degree course	Master programme: Food Science and Technology
ECTS credits	6 ECTS
Compulsory attendance	No
Teaching language	Italiano

Subject teacher	Name Surname	Mail address	SSD
	Maria De Angelis	<a href="mailto:maria.deangelis@uniba.it">maria.deangelis@uniba.it</a>	AGR/16

ECTS credits details		
Basic teaching activities	5 ECTS Lectures	1 ECTS Laboratory or field class

Class schedule	
Period	I semester
Course year	First
Type of class	Lecture - workshops

Time management	
Hours	150
In-class study hours	54
Out-of-class study hours	96

Academic calendar	
Class begins	September 28 <sup>th</sup> , 2020
Class ends	January 22 <sup>th</sup> , 2021

Syllabus	
Prerequisites/requirements	Principles of biochemistry and fermented food microbiology
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Knowledge with main industrial requirements from livestock and of fermented vegetable foods</li> <li>○ Capacity to identify the strategies to develop a microbiological process and the microorganism suitable for obtaining a defined metabolite</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Skill to apply a systemic approach to solve problems in food industry by selected starter microorganisms, also to obtain specific metabolites</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ Correctly advising solutions to work in food industry and to solve problems in the field of sensory, nutritional, and hygienic properties of food in livestock-derived food processing industries and in vegetable food industry</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Describing microbiological problems most commonly found in food processing industries</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Updating the knowledge of advanced microbiological methods applied to improve microbiological food quality</li> <li>○ Skill to process original ideas about specific industry contexts</li> </ul> <p>The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Master Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)</p>
Contents	<ul style="list-style-type: none"> <li>• Endogenous milk enzymes and their pro-technological significance</li> </ul>

	<ul style="list-style-type: none"> <li>• Purification, characterization and use of microbial enzymes in dairy processing;</li> <li>• Use of adjunct starter in dairy industry</li> <li>• Biotechnology methods for cheese characterization: case studies</li> <li>• Animal- and vegetable-based functional food: case studies</li> <li>• Biopreservation of leavened baked goods; Sourdough and gluten intolerance, case studies.</li> <li>• Gut microbiota and diet.</li> <li>• Quorum-sensing and food-related microorganisms.</li> <li>• Use of starter microorganisms for producing vegetable based fermented food items, case studies</li> </ul>
Course program	
Reference books	<ul style="list-style-type: none"> <li>• Lecture notes and educational supplies provided during the course</li> <li>• Lecture notes and educational supplies will be available at the Food microbiology section.</li> <li>• Scientific reviews.</li> <li>• V. Bottazzi. Microbiologia lattiero-casearia, Edagricole.</li> <li>• C.A. Batt e P.D. Patel. Encyclopedia of Food Microbiology, Academic Press.</li> <li>• M. Vincenzini, P. Romano e G.A. Farris. Microbiologia del Vino, Casa Editrice Ambrosiana.</li> <li>• P.F. Fox, P.L.H. McSweeney, T.M. Cogan e T.P. Guinee. Cheese Chemistry, Physics and microbiology, Terza Edizione, Elsevier Academic Press.</li> <li>• Wood, B.J.B. Microbiology of Fermented Foods. 2.a ed. Glasgow: Blackie Academic &amp; Professional (1998).</li> <li>• Jay, J.M. Modern Food Microbiology. 5.a ed. London: Chapman &amp; Hall International Thomson Publishing (1997).</li> <li>• De Felip, G. Recenti Sviluppi di Igiene e Microbiologia degli Alimenti. Milano: Tecniche Nuove (2001).</li> <li>• M. Gobbetti, A. Corsetti (Ed.). Biotecnologia dei prodotti lievitati da forno. Casa Editrice Ambrosiana. (2010).</li> </ul>
Notes	
Teaching methods	<p>Lectures will be presented through PC assisted tools (PowerPoint, video) and field and laboratory classes. Case studies will be experienced</p> <p>Lecture notes and educational supplies will be provided by means of a mailing list or online platforms (i.e.: Edmodo, Google Drive...)</p>
Evaluation methods	<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 Master Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of an oral 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 Master Degree in Food Science and Technology.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Describing applied or study cases related to the main</li> </ul>

	<p>industrial problems for the characterization, management and conditioning of the sensory, nutritional and hygienic quality of fermented foods</p> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Describing the main strategies to use microorganisms in food related process</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ Expressing reasonable hypotheses about solutions related to innovation in the agri-food sector and to solve new issues</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Expressing reasonable hypotheses by clearly expressing the underlying arguments</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Draw with technical and scientific rigor innovative and original pathways that employ microorganisms both to tackle existing issues and to develop new ideas for resolving food industry issues</li> </ul>
Receiving times	From Monday to Thursday 9.00 a.m. – 18.30 p.m. by appointment only