

General Information	
Academic subject	Food Microbiology (I.C. Microbial biotechnologies for food quality)
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	maria.deangelis@uniba.it	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	October 7 th , 2019
Class ends	January 24 th , 2020

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"> ○ Knowledge with main industrial requirements from livestock and of fermented vegetable foods ○ Capacity to identify the strategies to develop a microbiological process and the microorganism suitable for obtaining a defined metabolite <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Skill to apply a systemic approach to solve problems in food industry by selected starter microorganisms, also to obtain specific metabolites <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ 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 <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Describing microbiological problems most commonly found in food processing industries <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Updating the knowledge of advanced microbiological methods applied to improve microbiological food quality ○ Skill to process original ideas about specific industry contexts <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"> • Endogenous milk enzymes and their pro-technological significance

	<ul style="list-style-type: none"> • Purification, characterization and use of microbial enzymes in dairy processing; • Use of adjunct starter in dairy industry • Biotechnology methods for cheese characterization: case studies • Animal- and vegetable-based functional food: case studies • Biopreservation of leavened baked goods; Sourdough and gluten intolerance, case studies. • Gut microbiota and diet. • Quorum-sensing and food-related microorganisms. • Use of starter microorganisms for producing vegetable based fermented food items, case studies
Course program	
Reference books	<ul style="list-style-type: none"> • Lecture notes and educational supplies provided during the course • Lecture notes and educational supplies will be available at the Food microbiology section. • Scientific reviews. • V. Bottazzi. Microbiologia lattiero-casearia, Edagricole. • C.A. Batt e P.D. Patel. Encyclopedia of Food Microbiology, Academic Press. • M. Vincenzini, P. Romano e G.A. Farris. Microbiologia del Vino, Casa Editrice Ambrosiana. • P.F. Fox, P.L.H. McSweeney, T.M. Cogan e T.P. Guinee. Cheese Chemistry, Physics and microbiology, Terza Edizione, Elsevier Academic Press. • Wood, B.J.B. Microbiology of Fermented Foods. 2.a ed. Glasgow: Blackie Academic & Professional (1998). • Jay, J.M. Modern Food Microbiology. 5.a ed. London: Chapman & Hall International Thomson Publishing (1997). • De Felip, G. Recenti Sviluppi di Igiene e Microbiologia degli Alimenti. Milano: Tecniche Nuove (2001). • M. Gobbetti, A. Corsetti (Ed.). Biotecnologia dei prodotti lievitati da forno. Casa Editrice Ambrosiana. (2010).
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"> ○ Describing applied or study cases related to the main

	<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"> ○ Describing the main strategies to use microorganisms in food related process <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Expressing reasonable hypotheses about solutions related to innovation in the agri-food sector and to solve new issues <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Expressing reasonable hypotheses by clearly expressing the underlying arguments <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ 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
Receiving times	From Monday to Thursday 9.00 a.m. – 18.30 p.m. by appointment only