General Information	
Academic subject	Food Biotechnology (I.C. Biology and biotechnology of Food-related microorganisms)
Degree course	Bachelor programme: Food Science and Technology
ECTS credits	6 ECTS
Compulsory attendance	No
Teaching language	Italiano

Subject teacher	Name Surname	Mail address	SSD
	Carlo G. Rizzello	carlogiuseppe.rizzello@uniba.it	AGR/16

ECTS credits details		
Basic teaching activities	4 ECTS Lectures	2 ECTS Laboratory or field class

Class schedule	
Period	II semester
Course year	Second
Type of class	Lecture- workshops

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	February 24th, 2020
Class ends	June 12th, 2020

Syllabus	
Prerequisites/requirements	Prerequisites: "Food Biochemistry and Genetics" The student must possess the basic knowledge of General Chemistry
Expected learning outcomes	*Knowledge and understanding* ○ Knowledge and understanding of microbial cell physiology and microbial growth in response to environmental parameters ○ Knowledge of spoilage and pathogenic microorganisms in vegetable- and animal-derived food *Applying knowledge and understanding* ○ Knowledge of the main methods for determination and control of microrganisms in food ○ Skill to work in laboratories wherein food-related microorganisms are cultivated isolated and identified *Making informed judgements and choices* ○ Correctly advising solutions to control microorganisms in food *Communicating knowledge and understanding* ○ Describing the microbial cell physiology and microbial growth in response to environmental parameters *Capacities to continue learning* ○ Updating the knowledge of methods to use starter and monitor spoilage and pathogenic microrganisms growth in vegetable- and animal-derived food 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)

Contents	Microbial cell physiology and microbial growth in response to environmental parameters. Outlines of environmental adaptation. Food-related microorganisms: meat, poultry, eggs, fish, milk and dairy products, fresh and fermented vegetables. Basic methods for determining microbial cell density in food. Control of microbial cell numbers in food: chemicals, radiations, low temperatures, high temperatures, drying. Principles of HACCP.
Course program	
Reference books	• Lecture notes and educational supplies provided during the course • Lecture notes and educational supplies will be provided by means of online platforms (i.e.: Edmodo) • Brock; Madigan; Martinko. Brock Biologia dei Microrganismi 1, 2. Casa Editrice Ambrosiana (2007). • Farris, Gobbetti, Neviani, Vincenzini. Microbiologia dei prodotti alimentari. Casa Editrice Ambrosiana (2012). • Gobbetti M. e Corsetti A. Biotecnologie dei prodotti lievitati da forno. Casa Editrice Ambrosiana (2010). • Jay, J.M. (Ed.). Modern Food Microbiology. 5a ed. London: Chapman & Hall International Thomson Publishing (1997).
Notes	
Teaching methods	Lectures will be presented through PC assisted tools (PowerPoint, video). Field and laboratory classes, reading of regulations, will be experienced Lecture notes and educational supplies will be provided by means of a mailing list or online platforms (i.e.: Edmodo, Google Drive…)
Evaluation 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 (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 Degree in Food Science and Technology. Non-Italian students may be examined in English language, according to the aforesaid procedures.
Evaluation criteria	*Knowledge and understanding* ○ Describing microbial cell physiology and microbial growth in response to environmental parameters ○ Describing spoilage and pathogenic microorganisms in vegetable- and animal-derived food *Applying knowledge and understanding* ○ Describing the main methods for determination and control of microbial cell densities in food *Making informed judgements and choices* ○ Expressing reasonable hypotheses about solutions to control microbial cell densities in laboratories wherein food-related microorganisms are cultivated *Communicating knowledge and understanding* ○ Describing the microbial cell physiology and microbial

	growth in response to environmental parameters *Capacities to continue learning* ○ Expressing reasonable hypotheses about use of starter and the monitoring of spoilage and pathogenic microrganisms growth in vegetable- and animal-derived food
Receiving times	From Monday to Thursday 9.00 a.m. – 17.30 p.m. by appointment only