

General Information	
Academic subject	Ecophysiology and control of food -related microorganisms (6 ECTS) (I.C. Biology and ecophysiology 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
	<b>Maria Calasso</b>	<a href="mailto:maria.calasso@uniba.it">maria.calasso@uniba.it</a>	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	1 <sup>st</sup> March, 2022
Class ends	June 17 <sup>th</sup> , 2022

Syllabus	
Prerequisites/requirements	Prerequisites: "Food Biochemistry and Genetics" The student must possess the basic knowledge of General Chemistry
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Knowledge and understanding of microbial cell physiology and microbial growth in response to environmental parameters</li> <li>○ Knowledge of spoilage and pathogenic microorganisms in vegetable- and animal-derived food</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Knowledge of the main methods for determination and control of microorganisms in food</li> <li>○ Skill to work in laboratories wherein food-related microorganisms are cultivated isolated and identified</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ Correctly advising solutions to control microorganisms in food</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Describing the microbial cell physiology and microbial growth in response to environmental parameters</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Updating the knowledge of methods to use starter and monitor spoilage and pathogenic microorganisms growth in vegetable- and animal-derived food</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 Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)</p>

Contents	<p>Microbial cell physiology and microbial growth in response to environmental parameters.</p> <p>Outlines of environmental adaptation.</p> <p>Food-related microorganisms: meat, poultry, eggs, fish, milk and dairy products, fresh and fermented vegetables.</p> <p>Basic methods for determining microbial cell density in food.</p> <p>Control of microbial cell numbers in food: chemicals, radiations, low temperatures, high temperatures, drying.</p> <p>Principles of HACCP.</p>
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 provided by means of online platforms (i.e.: Edmodo)</li> <li>• Brock; Madigan; Martinko. Brock Biologia dei Microrganismi 1, 2. Casa Editrice Ambrosiana (2007).</li> <li>• Farris, Gobbetti, Neviani, Vincenzini. Microbiologia dei prodotti alimentari. Casa Editrice Ambrosiana (2012).</li> <li>• Gobbetti M. e Corsetti A. Biotecnologie dei prodotti lievitati da forno. Casa Editrice Ambrosiana (2010).</li> <li>• Jay, J.M. (Ed.). Modern Food Microbiology. 5a ed. London: Chapman &amp; Hall International Thomson Publishing (1997).</li> </ul>
Notes	
Teaching methods	<p>Lectures will be presented through PC assisted tools (PowerPoint, video). Field and laboratory classes, reading of regulations, 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 Bachelor 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 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.</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 Bachelor 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 microbial cell physiology and microbial growth in response to environmental parameters</li> <li>○ Describing spoilage and pathogenic microorganisms in vegetable- and animal-derived food</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Describing the main methods for determination and control of microbial cell densities in food</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ Expressing reasonable hypotheses about solutions to control microbial cell densities in laboratories wherein food-related microorganisms are cultivated</li> </ul> <p><i>Communicating knowledge and understanding</i></p>

	<ul style="list-style-type: none"> <li>○ Describing the microbial cell physiology and microbial growth in response to environmental parameters</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Expressing reasonable hypotheses about use of starter and the monitoring of spoilage and pathogenic microorganisms growth in vegetable- and animal-derived food</li> </ul>
Receiving times	From Monday to Thursday 9.00 a.m. – 17.30 p.m. by appointment only