

General information		
Academic subject	Microbiology applied to food safety and stability (I.C. Food Quality and Safety)	
Degree course	Food Science and Technology (L26)	
Academic Year	Third	
European Credit Transfer and Accumulation System (ECTS)	3 ECTS	
Language	Italian	
Academic calendar (starting and ending date)	February 27 th , 2023 – June 16 th , 2023	
Attendance	No Compulsory	

Professor/ Lecturer	
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Department and address	DiSSPA
Virtual headquarters	Microsoft Teams
Tutoring (time and day)	Monday-Friday 9.00-16.00

Syllabus	
Learning Objectives	<i>The course aims to provide the student with knowledge and skills relating to the process of analyzing the microbiological risk of foods, methods for the enumeration of pathogenic microorganisms in foods and for the determination of metabolites originating from microbial metabolism in foods. The student will acquire knowledge related to the prevention of microbial deterioration in food of animal and vegetable origin.</i>
Course prerequisites	<i>Knowledge of basic microbiology and microbiology applied to food and beverages</i>
Contents	<ul style="list-style-type: none"> • Analysis of the microbiological risk of food • Methods for the study of shelf life through the application of predictive microbiology methods • Search for pathogenic microorganisms and their metabolites in food • Insights into innovative methods of prevention and control of microbial contamination of food of plant and animal origin
Books and bibliography	<ol style="list-style-type: none"> 1. Madigan, M.T., J.M. Martinko and J. Parker. Brock – Biology of Microorganisms. 8.a ed. London: Prentice & Hall International. 1997. 2. Jay, J.M., M.J. Loessner, D.A. Golden. Modern Food Microbiology. 7th ed. Springer Science+Business Media, LLC. 2005. 3. ICMSF. Microorganisms in foods 6 – Microbial Ecology of Food Commodities. 2.a ed. New York: Kluwer Academic/Plenum Publishers. 2005.
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			
75	16	14	45
ECTS			
3	2	1	

Teaching strategy	<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 online platforms</p> <p>Projection of educational videos and practical classes (ranging from a total of 5 to 10 hours) consisting in the discussion of cases-study are also included as supplementary teaching method. A dedicated mailing list will be created for interaction with students.</p>
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:	<ul style="list-style-type: none"> ○ Knowledge and skills related to the microbiological risk analysis process of food .
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ Knowledge and skills related to the methods for the enumeration of pathogenic microorganisms in food and for the determination of metabolites originating from microbial metabolism in food, as well as methods for evaluating the shelf-life
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgements and choices</i> <ul style="list-style-type: none"> ○ Ability to process the information acquired in order to develop interventions aimed at improving the healthiness of food • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to describe the general characteristics related to microbiological risk analysis • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to autonomously update their knowledge on innovative methods of prevention and control of microbial contamination of food of plant and animal origin
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	<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's degree in food science and Technology.</p> <p>The foreign student's profit test can be done in English in the way described above.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> • To describe the microbiological risk analysis process of food <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> • To describe the acquired microbiological knowledge for the enumeration of pathogenic microorganisms in food and for the determination of

	<p>metabolites originating from microbial metabolism in food, as well as for the evaluation of shelf-life</p> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> • To describe how to act for improving food salubrity <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> • To describe the general characteristics related to microbiological risk analysis <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ To describe the means for targeting personal knowledges for solving new food salubrity issues with particular regard to innovative methods of prevention and control of microbial contamination of food of plant and animal origin
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	