

COURSE OF STUDY *Bachelor degree: Food Science and Technology (L26)*
ACADEMIC YEAR *2023-2024*
ACADEMIC SUBJECT *Microbiology applied to food safety and stability (3 ECTS) - I.C.
Food Quality and Safety (6 ECTS)*

General information	
Year of the course	<i>Third</i>
Academic calendar (starting and ending date)	<i>First semester (September 25th, 2023 – January 19th, 2024)</i>
Credits (CFU/ETCS):	<i>3</i>
SSD	<i>Agricultural microbiology (AGR/16)</i>
Language	<i>Italian</i>
Mode of attendance	<i>No Compulsory</i>

Professor/ Lecturer	
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Department and address	<i>DIP. DISSPA – Università degli Studi di Bari</i>
Virtual room	<i>Microsoft Teams: code 0ghc73n</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	<i>Monday to Friday by appointment only.</i>

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<i>75</i>	<i>16</i>	<i>14</i>	<i>48</i>
CFU/ETCS			
<i>3</i>	<i>2</i>	<i>1</i>	

Learning Objectives	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.
Course prerequisites	Knowledge of basic microbiology and microbiology applied to food and beverages

Teaching strategie	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 online platforms 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.
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Expected learning outcomes in terms of	
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"> • Making informed judgements and choices <ul style="list-style-type: none"> ○ Ability to process the information acquired in order to develop interventions aimed at improving the healthiness of food • Communicating knowledge and understanding <ul style="list-style-type: none"> ○ Ability to describe the general characteristics related to microbiological risk analysis • Capacities to continue learning <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
Syllabus	
Content knowledge	<ul style="list-style-type: none"> • Analysis of the microbiological risk of foods • Methods for studying shelf life through the application of predictive microbiology methods • Research of pathogenic microorganisms and their metabolites in foods • Insights into innovative methods of prevention and control of microbial contamination of foods of plant and animal origin Criteria for microbial starters selection.
Texts and readings	<ul style="list-style-type: none"> • Lecture notes and lecture materials provided during the course. • Loessner, D.A. Golden. Microbiologia degli alimenti. Springer. 2009. • Paparella, A., Schirone, M., Visciano, P. Igiene nei processi alimentari. Hoepli 2023 • Madigan, M.T., J.M. Martinko, D.A. Stahl, D. Clark. Biologia dei Microorganismi, vol. 1 – Microbiologia generale. Pearson Italia, 2012. • ICMSF. Microorganisms in foods 6 – Microbial Ecology of Food Commodities. 2.a ed. New York: Kluwer Academic/Plenum Publishers. 2005. • De Felip, G. Recenti sviluppi di Igiene e Microbiologia degli Alimenti. Tecniche Nuove. 2001. • Farris, G. A., M. Gobbetti, E. Neviani, M. Vincenzini. Microbiologia dei prodotti alimentari. Casa Editrice Ambrosiana. 2012.
Notes, additional materials	<ul style="list-style-type: none"> • Scientific papers •
Repository	All teaching material will be available to students on web platforms (class Teams code <i>Oghc73n</i>).

Assessment	
Assessment 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</p>

	<p>established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor's degree in food science and Technology. The foreign student's profit test can be done in English in the way described above.</p>
Assessment criteria	<p>Knowledge and understanding</p> <ul style="list-style-type: none"> • To describe the microbiological risk analysis process of food <p>Applying knowledge and understanding</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 metabolites originating from microbial metabolism in food, as well as for the evaluation of shelf-life <p>Making informed judgements and choices</p> <ul style="list-style-type: none"> • To describe how to act for improving food salubrity <p>Communicating knowledge and understanding</p> <ul style="list-style-type: none"> • To describe the general characteristics related to microbiological risk analysis <p>Capacities to continue learning</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
Final exam and grading criteria	<p>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</p>
Further information	
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