

Syllabus

Course description

Course title	Industrial microbiology for food quality improvement
Course code	
Scientific sector	AGR/16
Degree	Food Sciences For Innovation And Authenticity
Semester	1 st
Year	II
Academic year	2022/23
Credits	6
Modular	No

Total lecturing hours	48
Total exercise hours	12
Attendance	Mandatory
Prerequisites	
Course page	

Specific educational objectives	<p>The course is classified as TAF B, and falls within the AGR/16 (Food Microbiology) area. The course is part of the 2nd Year, included in the "Nutrition Sciences" curriculum (at University of Parma).</p> <p>The course is focused on the topic of Industrial Microbiology, and will discuss some basic principles of microbial fermentations, and how this technology can be declined towards the development or improvement of food products. The main topics will be:</p> <ul style="list-style-type: none"> - Principles of microbial growth and nutrition - Fermentation types (batch, fed-batch, continuous) and microbial growth modelling - Regulation of biosynthesis of microbial metabolites - Biosynthesis of added value products (antimicrobials, aroma compounds, secondary metabolites) - Case studies: fermentation for the production of novel foods, failure of fermentative processes
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Lecturer	Levante Alessia
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Learning outcomes	<p>The following outcomes are expected to be achieved at the end of the course:</p> <ol style="list-style-type: none"> a. Knowledge and understanding: Understand potential applications of microbial fermentation in food industry.
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	<ul style="list-style-type: none"> b. Ability to apply knowledge and understanding: Thanks to the skills developed throughout the course and practical activities, the students will learn how to modulate growth/fermentation conditions to drive microbial growth and compounds biosynthesis. c. Autonomy of judgment: Students will develop a critical sense in judging traditional and innovative fermentative process, to improve existing fermentations or develop new products. d. Ability to learn: The proposed course organisation will include lectures, group work, individual analysis, scientific articles reviews and practical activities.
Assessment	<p>Project work: each student will choose a recent literature paper dealing with covered topics (either selected from the student or from a provided list of papers) and prepare a short presentation describing methods, results, and conclusions.</p> <p>Oral exam: the presentation will be followed by an oral examination with review questions on the acquired knowledge, focusing on the presentation topic and on lectures and laboratory topics.</p>
Assessment language	English
Evaluation criteria and criteria for awarding marks	<p>Oral exam and project work will be assessed on a scale 0-30. Each part will be weighted equally (50% oral exam and 50% project work).</p> <p>For the assessment of project work it will be relevant: clarity of reported data, ability to summarize, careful reporting of materials and methods according to knowledge acquired during the course, ability to summarize in own words.</p> <p>For the assessment of oral exam, it will be evaluated: clarity of answers, ability to evaluate, and establish relationships between topics.</p>
Required readings	Notes taken during lectures and teaching material provided by the lecturer, including selected scientific papers.
Supplementary readings	<p>Waites M.J. et al "Industrial Microbiology: An Introduction" (Blackwell Science).</p> <p>Wilson D.B., et al "Industrial Microbiology" (Wiley).</p>