

Academic subject: Food biotechnology			
Degree Class: LM-7		Degree Course: Master Degree: Biotechnologies applied to food quality and safety	
		Academic Year: 2020/2021	
		Kind of class: Mandatory	Year: I Period: March 8 th – June 18 th 2021
		ECTS: 6 divided into ECTS lessons: 5 ECTS exe/lab/tutor: 1	
Time management, hours, in–class study hours, out–of–class study hours lesson: 40 exe/lab/tutor: 12 in–class study: 52 out–of–class study: 98			
Language: Italian	Compulsory Attendance: no		
Subject Teacher: Minervini Fabio	Tel: +39 0805442946 e–mail: fabio.minervini@uniba.it	Office: Department of Soil, Plant and Food Sciences Room 18 Floor 3 rd	Office days and hours: the teacher is available every Tuesday, Thursday and Friday (02:00 pm – 05:00 pm) only by appointment agreed upon exchange of e-mail messages
Prerequisites:			
Educational objectives: The student will acquire in-depth knowledge about biotechnological approaches aimed to improve quality of animal- and vegetable-derived food products.			
Expected learning outcomes (according to Dublin Descriptors)	Knowledge and understanding: • Deep knowledge about microbiological strain-typing and selection of microorganisms used in food processing		
	Applying knowledge and understanding: • To apply the most appropriate knowledges to solve novel issues and provide the most actual services in practical situations involving agri-food biotechnologies; • To elaborate novel biotechnological approaches applied to above-mentioned fields.		
	Making judgements: • Ability to focus on the main features of novel issues in the field of pro-technological microorganisms applied to food biotechnologies and to solve those issues using either advanced knowledge acquired during study or novel solutions. • Ability to evaluate autonomously complex experimental data related to biotechnological applications of microorganisms to food sector and to decipher correctly the related results.		
	Communication: • Ability to use properly oral and written tools of communication, in both Italian and English language, even during events of presentation and divulgation of experimental data and themes of food biotechnologies.		
	Lifelong learning skills: • Ability to learn and deepen knowledge about application of pro-technological microorganisms to food biotechnologies, through scientific articles and books (hard copy or electronic version) and participation in seminars and congresses.		

Course program

- Applicative biotechnological features of carbohydrates and amino acids metabolism in lactic acid bacteria and yeasts
- Biotechnological potential of proteolytic and peptidolytic enzymes of lactic acid bacteria
- Dynamics and stability of sourdough microbial communities
- Use of microbial cytoplasmic extracts in sourdough-based bread-making
- Biotechnological approaches for improving nutritional and sensory traits of leavened baked goods
- Microbial-based biotechnologies for reducing the concentration of biogenic amines in fermented food and beverages
- Biotechnology-based strategies for increasing shelf-life of perishable foods
- Activity mechanisms and selection pathway of probiotic microorganisms used in foods
- Laboratory techniques applied in food biotechnologies

Teaching methods:

Lectures will be presented through PC assisted tools (Powerpoint) and slide projector. Laboratory classes will be also scheduled. Powerpoint presentations, in pdf format, will be shared with students through a mailing list. A dedicated mailing list will be created for interaction with students.

Auxiliary teaching:**Assessment methods:**

The exam consists of an oral dissertation on the topics developed during the course.

Non-Italian students will be examined in English or Italian language.

Bibliography:

- Notes from lectures and laboratory classes. Presentations (in pdf) provided by the teacher.
- ICMSF. Microorganisms in foods 6 – Microbial Ecology of Food Commodities. 2.a ed. New York: Kluwer Academic/Plenum Publishers. 2005.
- Gobbetti, M., Gänzle M. Handbook on Sourdough Biotechnology. Springer. 2013.
- McSweeney, P.L.H. Cheese problems solved. CRC Press – Woodhead Publishing Limited. 2007.