COURSE OF STUDY *Master degree: Food Science and Technology (LM70)*
ACADEMIC YEAR *2023-2024*
ACADEMIC SUBJECT *Packaging Technologies and Shelf-Life (3 ECTS) - I.C Food Technologies, sensory analysis and packaging (9 ECTS)*

General information	
Year of the course	*First*
Academic calendar (starting and ending date)	*Second semester (February 26th – June 14th, 2024)*
Credits (CFU/ETCS):	3
SSD	*Food Science and Technology (AGR/15)*
Language	*Italian*
Mode of attendance	*No Compulsory*

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

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
75	*16*	*14*	*45*
CFU/ETCS			
3	*2*	*1*	

Learning Objectives	The student will acquire knowledge and skills about packaging technologies and their influence of the quality of food. The course will provide skills about the planning of the shelf-life studies with simulation and provisional approaches. The capacity of the students to apply shelf-life studies will be the final objective of the course.
Course prerequisites	knowledge of the Food Contact Materials (FCM) and their properties. Knowledge about the food quality decay processes.

Teaching strategie	Course topics are addressed with the aid of Power Point presentations, case study analysis and classroom exercise on the shelf-life evaluation of foods.
Expected learning outcomes in terms of	
Knowledge and understanding on:	• Knowledge on the packaging and filling technologies and their influence on the food quality. • knowledge on the aspects linked to quality decrease during storage of foods and beverages. • knowledge on the tests for the shelf-life assessment.

Applying knowledge and understanding on:	• Ability to apply the correct packaging technology as a function of the type of food and its prevalent decay phenomena. • Ability to choose and apply the correct test to evaluate the shelf-life of foods.
Soft skills	• Making informed judgments and choices: ○ Ability to choose the correct packaging technologies able to preserve the food quality and extend the shelf-life. ○ Ability to choose the test for the shelf-life assessment. • Communicating knowledge and understanding: ○ Ability to describe the packaging technologies, the test for the shelf-life assessment and to understand the results. • Capacities to continue learning: ○ Ability to deepen and upgrade their skills respect to the food packaging technologies and the shelf-life assessment.
Syllabus	
Content knowledge	○ Packaging and filling technologies. ○ Packaging technologies for food quality: Sterilization of materials and packs, ATM and functional packaging. Example about the applications of the packaging technologies on animal and vegetable foods. ○ Shelf-life of foods: Quality parameters and limits of acceptability. ○ Tests for the shelf-life assessment.
Texts and readings	• Gordon L. Robertson, Food Packaging: Principles and Practice, Third Edition. CRC Press, 2013. • Joongmin Shin and Susan E.M. Selke, Food Packaging. In: Food Processing: Principles and Applications, Second Edition. Ed: Stephanie Clark, Stephanie Jung, and Buddhi Lamsal. John Wiley and Sons, 2014
Notes, additional materials	• Scientific papers
Repository	All teaching material will be available to students on web platforms

Assessment	
Assessment methods	The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in practical activities (laboratory and educational visits). Students 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 one academic year (Art. 4 of the Didactic Regulations of the Master's Degree Course in Food Science and Technology). The result of the mid-term exam is communicated by publication in the student's electronic register and contributes to the assessment of the profit examination by means of calculation of the weighted average. The exam for foreign students may be conducted in English as described above.
Assessment criteria	• Knowledge and understanding: ○ Describe the different packaging and filling technologies and the influence on the quality of foods and beverages. ○ Describe the aspects linked to the quality decrease during storage of foods and beverages. ○ Define the tests for the shelf-life assessment of foods and beverages. • Applying knowledge and understanding: ○ Describe the applications of the packaging and filling technologies. ○ Apply the different test for the shelf-life assessment and capacity to understand the results. • Autonomy of judgment:

	○ Make reasonable hypotheses about the modulate of technological parameters in the packaging and filling technologies ○ Make reasonable hypotheses to choose the test able to simulate and forecast the shelf-life of foods and beverages. • Communicating knowledge and understanding: ○ Describe the technological processes and the process parameters to produce the main preserved foods. ○ Describe the analytical procedures and methods able to assess the quality parameters of the preserved foods. • Communication skills: ○ The student will be evaluated considering the use of appropriate technical language. • Capacities to continue learning: ○ Describe the methods to deepen and upgrade their skills the packaging and filling technologies and the principal test for the shelf-life assessment.
Final exam and grading criteria	The assessment of the student's preparation is based on predetermined criteria in accordance with the Didactic Regulations of the Master's Degree Course in Food Science and Technology (art. 4). The Examination Committee has a score ranging from a minimum of 18 to a maximum of 30 points for a positive assessment of the student's performance. By unanimous vote of its members, the Board may award honours in cases where the final mark is 30.
Further information	