

General information		
Academic subject	Packaging Technologies and Shelf-Life (I.C Food Technologies, sensory analysis and packaging)	
Degree course	Master Programme: Food science and technology (LM70)	
Academic Year	First	
European Credit Transfer and Accumulation System (ECTS)	3 ECTS	
Language	Italian	
Academic calendar (starting and ending date)	February 27 th , 2022 – June 16 th , 2023	
Attendance	No Compulsory	

Professor/ Lecturer	
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Virtual headquarters	Microsoft Teams
Tutoring (time and day)	Monday-Friday 9.00-14.00

Syllabus	
Learning Objectives	<i>The course aims to provide 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</i>
Course prerequisites	<i>knowledge of the Food Contact Materials (FCM) and their properties. Knowledge about the food quality decay process.</i>
Contents	<i>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.</i>
Books and bibliography	<i>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</i>
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
30	16	14	45
ECTS			
3	2	1	
Teaching strategy		The topics of the course will be treated with the help of Power Point presentations. The exercises will consist of laboratory activities and cases study	

	All the material used for the lessons will be made available to students on special web platforms.
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 master's degree in food science and Technology (expressed through the European Descriptors of the qualification)
Knowledge and understanding on:	<ul style="list-style-type: none"> ○ The packaging and filling technologies and their influence on the food quality. ○ The aspects linked to quality decrease during storage of foods and beverages. ○ The tests for the shelf-life assessment.
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ Ability to Apply knowledge about the packaging and filling technologies and the shelf-life assessment
Soft skills	<ul style="list-style-type: none"> ● <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ 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. ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to describe the packaging technologies, the test for the shelf-life assessment and to understand the results. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to deepen and upgrade their skills respect to the food packaging technologies and the shelf-life assessment
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 Master 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 master 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	<ul style="list-style-type: none"> ● <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ 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.



	<ul style="list-style-type: none">• <i>Applying knowledge and understanding</i><ul style="list-style-type: none">○ Describe the applications of the packaging and filling technologies.○ Apply the different test for the shelf-life assessment and capacity to understand the results.• <i>Autonomy of judgment</i><ul style="list-style-type: none">○ 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.• <i>Communicating knowledge and understanding</i><ul style="list-style-type: none">○ 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.• <i>Communication skills</i><ul style="list-style-type: none">○ The student will be evaluated considering the use of appropriate technical language.• <i>Capacities to continue learning</i><ul style="list-style-type: none">○ Describe the methods to deepen and upgrade their skills the packaging and filling technologies and the principal test for the shelf-life assessment.
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	