

General information	
Academic subject	<i>Cereal-base food technology (I.C. Technology of cereal-based foods and preserves)</i>
Degree course	<i>Master programme: Food Science and Technologies (LM70)</i>
Academic Year	<i>Third</i>
European Credit Transfer and Accumulation System (ECTS)	4 ECTS
Language	<i>Italian</i>
Academic calendar (starting and ending date)	<i>September 26th, 2022 – January 20th, 2023</i>
Attendance	<i>Not compulsory</i>

Professor/ Lecturer	
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Virtual headquarters	Microsoft Teams
Tutoring (time and day)	<i>Monday-Friday 10.00 am – 4.00 pm by previous agreement by e-mail</i>

Syllabus	
Learning Objectives	<i>The student will acquire knowledge and skills on the production technology of cereal-based foods in order to preserve the quality of raw material along production</i>
Course prerequisites	<i>Knowledge about biochemistry of the main food constituents</i>
Contents	<ul style="list-style-type: none"> <i>Milling technology (artisan and industrial); classification of milling streams, milling yield and quality. Process of gluten formation. Analytical methods to evaluate gluten quality (with the aid of case-studies, laboratory exercitations and video). Check list on topics discussed.</i> <i>Bread-making technology: Brabender amylograph; fundamental operations and methods of bread-making; defects and alterations; shelf-life and staling; quality indices; flat breads (with the aid of case-studies, laboratory exercitations and video). Check list on topics discussed.</i> <i>Dried and fresh pasta-making technology: main parameters influencing the process; fundamental operations; types of drying and their effects; defects and indices of quality of pasta (with the aid of case-studies, laboratory exercitations and video). Check list on topics discussed.</i> <i>Biscuits' technology. Extrusion-cooking technology: flaked breakfast cereals, puffed cereals, snack foods. Check list on topics discussed.</i>
Books and bibliography	<ul style="list-style-type: none"> <i>Cappelli P., Vannucchi V. Principi di chimica degli alimenti, Conservazione, trasformazione, normativa – Ed. 2016 (http://www.zanichelli.it/ricerca/prodotti/principi-di-chimica-degli-alimenti).</i> <i>Milatovich L., Mondelli G., La tecnologia della pasta alimentare, Chiriotti Editore, Pinerolo, 1990.</i> <i>Quaglia G. B., Scienza e tecnologia della panificazione, Chiriotti Editore, Pinerolo, 1986.</i> <i>Carrai B., Arte bianca, Edagricole, 2001.</i>
Additional materials	<ul style="list-style-type: none"> <i>Notes of the lectures distributed during the course (all the support materials are available online on didactic platforms).</i> <p><i>Additional readings:</i></p> <ul style="list-style-type: none"> <i>Fast R. B., Caldwell E. F., Breakfast cereals and how they are made. American Association of Cereal Chemists (AACC), St. Paul, Minnesota, USA, 2000.</i>

	<ul style="list-style-type: none"> • <i>Kill R.C., Turnbull K., Pasta and semolina technology, Blackwell Science, 2000.</i> • <i>Hui Y.H., Corke H., De Leyn I., Nip W.K., Cross N. Bakery products. Science and technology, Wiley-Blackwell, 2007.</i> • <i>Cauvain S.P., Young L.S., Technology of Breadmaking. Springer Science and Business Media.</i> • <i>Hamaker, Technology of Functional Cereal products. CRC Press.</i> • <i>Schleicher E., Schieberle P., Hoffmann T., Somoza V. The Maillard Reaction: Recent Advances in Food and Biomedical Sciences. Blackwell-Wiley.</i> • <i>Guy R., Extrusion cooking. Technologies and applications. CRC Press, Boca Raton, Florida, USA, 2000.</i>
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Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/Self-study hours
Hours			
100	24	14	62
ECTS			
4	3	1	
Teaching strategy	<p>Lectures will be presented through PC assisted tools (PowerPoint, video), discussion of case studies, and integrated by practical exercitations in laboratory. Lecture notes and educational supplies will be provided by means of online platforms</p>		
Expected learning outcomes	<p>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)</p>		
Knowledge and understanding on:	<p>Knowledge and understanding about proper processing technologies (including innovative ones) able to produce high quality cereal-based food</p>		
Applying knowledge and understanding on:	<p>Ability to analyze the relations between cereal-based food composition and properties; ability to analyze the effects of processing conditions on quality features of cereal-based food products</p>		
Soft skills	<p><i>Making informed judgements and choices</i> Ability to analyze a productive process and to properly choose actions and interventions to manage quality and safety in the cereal-based food industry; ability to properly select the raw materials to ensure the obtaining of high quality of cereal-based food products</p> <p><i>Communicating knowledge and understanding</i> Ability to communicate at company level and to third parties the technical choices needed to manage quality of cereal-based food products</p> <p><i>Capacities to continue learning</i> Ability to deepen and update the knowledge regarding the quality management of cereal-based food products</p>		
<p>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).</p>			

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>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Prove to know and having understood the proper processing technologies (including innovative ones) able to produce high quality cereal-based foods <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Prove to be able to analyze the relations between cereal-based food composition and properties; Prove to be able to analyze the effects of processing conditions on quality features of cereal-based food products <p><i>Autonomy of judgement</i></p> <ul style="list-style-type: none"> ○ Prove to be able to analyze a productive process and to properly program actions and interventions to manage quality and safety in the cereal-based food industry <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Prove to be able to communicate at company level and to third parties the technical choices made to manage quality of cereal-based food products <p><i>Communication skills</i></p> <ul style="list-style-type: none"> ○ Prove to be able to communicate at company level and to third parties using the appropriate technical language <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Prove to be able to deepen and update the knowledge regarding the management of quality of cereal-based food products
Criteria for assessment and attribution of the final mark	<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>
Additional information	