

**COURSE OF STUDY** *Master degree: Food Science and Technology (LM70)*

**ACADEMIC YEAR** *2023-2024*

**ACADEMIC SUBJECT** *Technology of cereal-based foods (4 ECTS) - (I.C. Technology of cereal-based and preserved foods (9 ECTS))*

General information	
Year of the course	<i>First</i>
Academic calendar (starting and ending date)	<i>I semester (September 25<sup>th</sup>, 2023 – January 19<sup>th</sup>, 2024)</i>
Credits (CFU/ECTS)	<i>4</i>
Language	<i>Italian</i>
Mode of attendance	<i>Not compulsory</i>

Professor/ Lecturer	
Name and Surname	Antonella Pasqualone
E-mail	<a href="mailto:antonella.pasqualone@uniba.it">antonella.pasqualone@uniba.it</a>
Telephone	0805442225
Department and address	DiSSPA
Virtual headquarters	Microsoft Teams (class code = gpistd8)
Office hours (and modalities: e.g. by appointment, on line, etc.)	Monday-Friday 10.00 am – 4.00 pm by appointment only

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/Self-study hours
<b>Hours</b>			
<i>100</i>	<i>24</i>	<i>14</i>	<i>62</i>
<b>ECTS</b>			
<i>4</i>	<i>3</i>	<i>1</i>	
<b>Learning Objectives</b>	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		
<b>Course prerequisites</b>	Knowledge about biochemistry of the main food constituents		
<b>Teaching strategy</b>	Lectures will be presented through PC assisted tools (PowerPoint, video), discussion of case studies, and integrated by practical exercises in laboratory. Lecture notes and educational supplies will be provided by means of online platforms		
<b>Expected learning outcomes in terms of:</b>			
<b>Knowledge and understanding on:</b>	Knowledge and understanding about proper processing technologies (including innovative ones) able to produce high quality cereal-based food		
<b>Applying knowledge and understanding on:</b>	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><b>Soft skills</b></p>	<p><b><i>Making informed judgements and choices</i></b> 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><b><i>Communicating knowledge and understanding</i></b> Ability to communicate at company level and to third parties the technical choices needed to manage quality of cereal-based food products</p> <p><b><i>Capacities to continue learning</i></b> Ability to deepen and update the knowledge regarding the quality management of cereal-based food products</p>
<p><b>Syllabus</b></p>	
<p><b>Content knowledge</b></p>	<ul style="list-style-type: none"> <li>● 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 exercises and video). Check list on topics discussed.</li> <li>● 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 exercises and video). Check list on topics discussed.</li> <li>● 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 exercises and video). Check list on topics discussed.</li> <li>● Biscuits' technology. Extrusion-cooking technology: flaked breakfast cereals, puffed cereals, snack foods. Check list on topics discussed.</li> </ul>
<p><b>Text and readings</b></p>	<ul style="list-style-type: none"> <li>● Cappelli P., Vannucchi V. Principi di chimica degli alimenti, Conservazione, trasformazione, normativa – Ed. 2016 (<a href="http://www.zanichelli.it/ricerca/prodotti/principi-di-chimica-degli-alimenti">http://www.zanichelli.it/ricerca/prodotti/principi-di-chimica-degli-alimenti</a>).</li> <li>● Milatovich L., Mondelli G., La tecnologia della pasta alimentare, Chiriotti Editore, Pinerolo, 1990.</li> <li>● Quaglia G. B., Scienza e tecnologia della panificazione, Chiriotti Editore, Pinerolo, 1986.</li> <li>● Carrai B., Arte bianca, Edagricole, 2001.</li> </ul>
<p><b>Notes, additional materials</b></p>	<ul style="list-style-type: none"> <li>● Notes of the lectures distributed during the course (all the support materials are available online on didactic platforms). Additional readings:</li> <li>● Fast R. B., Caldwell E. F., Breakfast cereals and how they are made. American Association of Cereal Chemists (AACC), St. Paul, Minnesota, USA, 2000.</li> <li>● Kill R.C., Turnbull K., Pasta and semolina technology, Blackwell Science, 2000.</li> <li>● Hui Y.H., Corke H., De Leyn I., Nip W.K., Cross N. Bakery products. Science and technology, Wiley-Blackwell, 2007.</li> <li>● Cauvain S.P., Young L.S., Technology of Breadmaking. Springer Science and Business Media.</li> <li>● Hamaker, Technology of Functional Cereal products. CRC Press.</li> </ul>

	<ul style="list-style-type: none"> <li>• Schleicher E., Schieberle P., Hoffmann T., Somoza V. The Maillard Reaction: Recent Advances in Food and Biomedical Sciences. Blackwell-Wiley.</li> <li>• Guy R., Extrusion cooking. Technologies and applications. CRC Press, Boca Raton, Florida, USA, 2000.</li> </ul>
<b>Repository</b>	<i>All teaching material will be available to students on web platforms (Teams class code = gpistd8)</i>

<b>Assessment</b>	
Assessment method	<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>
Assessment criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Prove to be able to analyze the relations between composition, structure and properties in cereal-based foods;</li> <li>○ Prove to be able to analyze the effects of processing conditions on the development of newly formed molecules and on the quality features of cereal-based food products</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Prove to know and having understood the proper processing technologies (including innovative ones) able to produce high quality cereal-based foods</li> </ul> <p><i>Autonomy of judgement</i></p> <ul style="list-style-type: none"> <li>○ 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, also in the frame of research and development of new products</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ 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</li> </ul> <p><i>Communication skills</i></p> <ul style="list-style-type: none"> <li>○ Prove to be able to communicate at company level and to third parties using the appropriate technical language</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Prove to be able to deepen and update the knowledge regarding the management of quality of cereal-based food products</li> </ul>
Final exam and grading criteria	<p>The assessment criteria will be based on: knowledge and understanding, the ability to apply knowledge, autonomy of judgment, i.e. the ability to criticize and formulate judgments, communication skills.</p> <p>The assessment of the student's proficiency is based on predetermined criteria in accordance with the Didactic Regulations of the Master's Degree Course in Food Science and Technology (art. 4).</p>

	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.
<b>Additional information</b>	