General Information	
Academic subject	Cereal technology and quality marks (I. C.: Food technologies I)
Degree course	Master "Food Science and Technologies"
ECTS credits	5 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Antonella Pasqualone	antonella.pasqualone@uniba.it	AGR/15

ECTS credits details		
Basic teaching activities	4 ECTS Lectures	1 ECTS Laboratory or field classes

Class schedule	
Period	I Semester
Course year	First
Type of class	Lectures, discussion of case studies, laboratory exercitations, technical visits to cereal-based food industries

Time management	
Hours	125
In-class study hours	46
Out-of-class study hours	79

Academic calendar	
Class begins	October 8th, 2018
Class ends	January 25th, 2019

Syllabus	
Prerequisites/requirements	Knowledge about biochemistry of the main food constituents
Expected learning outcomes	*Knowledge and understanding* ○ Knowledge and understanding about proper processing technologies (including innovative ones) able to produce high quality cereal-based foods; knowledge and understanding about quality marks applied to cereal-based foods, included ethnic and religious certifications *Applying knowledge and understanding* ○ 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; ability to manage quality marks applied to cereal-based food products, including ethnic and religious certifications *Making informed judgements and choices* ○ 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 fulfilling the requirements of ethnic and religious certifications *Communicating knowledge and understanding* ○ Ability to communicate at company level and to third parties the technical choices needed to manage quality of cereal-based food products as well as to manage ethnic and religious certifications of cereal-based food products *Capacities to continue learning* ○ Ability to deepen and update the knowledge regarding the management of quality and of ethnic and religious certifications in the production of cereal-based food products

	The learning outcomes, in terms of knowledge and ability, are detailed in the Regulation of Bachelor in Food Science and Technology - Annex A (expressed by European descriptors in the framework of food technology field).
Contents	• 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. • 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. • 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. • Biscuits' technology. Extrusion-cooking technology: flaked breakfast cereals, puffed cereals, snack foods. Check list on topics discussed. • Labelling and ethnic and religious quality marks applied to cereal-based food products. Check list on topics discussed.
Course program	
Reference books	• Notes of the lectures distributed during the course (all the support materials are available online by means of the Edmodo educational network). • 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). • Milatovich L., Mondelli G., La tecnologia della pasta alimentare, Chiriotti Editore, Pinerolo, 1990. • Quaglia G. B., Scienza e tecnologia della panificazione, Chiriotti Editore, Pinerolo, 1986. • Carrai B., Arte bianca, Edagricole, 2001. *Additional readings:* • Fast R. B., Caldwell E. F., Breakfast cereals and how they are made. American Association of Cereal Chemists (AACC), St. Paul, Minnesota, USA, 2000. • Kill R.C., Turnbull K., Pasta and semolina technology, Blackwell Science, 2000. • Hui Y.H., Corke H., De Leyn I., Nip W.K., Cross N. Bakery products. Science and technology, Wiley-Blackwell, 2007. • Cauvain S.P., Young L.S., Technology of Breadmaking. Springer Science and Business Media. • Hamaker, Technology of Functional Cereal products. CRC Press. • Schleicher E., Schieberle P., Hoffmann T., Somoza V. The Maillard Reaction: Recent Advances in Food and Biomedical Sciences. Blackwell-Wiley. • Guy R., Extrusion cooking. Technologies and applications. CRC Press, Boca Raton, Florida, USA, 2000.
Notes	
Teaching methods	Lectures (Power Point presentations) – discussion of case studies – laboratory exercitations - technical visits to cereal-based food industries
Evaluation methods	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). 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. 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.

	Non-Italian students may be examined in English language, according to the aforesaid procedures.
Evaluation criteria	*Knowledge and understanding* ○ Prove to know and having understood the proper processing technologies (including innovative ones) able to produce high quality cereal-based foods; knowledge and understanding about quality marks applied to cereal-based foods, included ethnic and religious certifications *Applying knowledge and understanding* ○ 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; Prove to be able to manage quality marks applied to cereal-based food products, including ethnic and religious certifications *Making informed judgements and choices* ○ Prove to be able to analyze a productive process and to properly choose actions and interventions to manage quality and safety in the cereal-based food industry; Prove to be able to properly select the raw materials to ensure the obtaining of high quality of cereal-based food products fulfilling the requirements of ethnic and religious certifications *Communicating knowledge and understanding* ○ Prove to be able to communicate at company level and to third parties the technical choices needed to manage quality of cereal-based food products as well as to manage ethnic and religious certifications of cereal-based food products *Capacities to continue learning* ○ Prove to be able to deepen and update the knowledge regarding the management of quality and of ethnic and religious certifications in the production of cereal-based food products
Receiving times	Tutorial activities: from Monday to Friday 9.00 a.m. – 14.00 p.m. by appointment only