Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Innovative Food Processing Technologies
Course code	44752
Scientific sector	AGR/15
Degree	International Master in Food Sciences for Innovation and Authenticity
Semester	I
Year	II
Academic year	2024/2025
Credits	6
Modular	No

Total lecturing hours	36
Total lab hours	24
Total exercise hours	-
Attendance	Strongly recommended
Prerequisites	Basic knowledge of mathematics, physics, chemistry
Course page	Course Offering - Enrolled from 2023 / Free University of Bozen-Bolzano (unibz.it)

Specific educational objectives	• type of course: area caratterizzante • scientific area: Food Science and Technology • the course is part of the common study program The aim of the course is to provide knowledge and understanding of the basic principles, effects and main applications of the innovative technologies in the field of food industry. Moreover, the course will provide information on the qualitative aspects and stability of food products obtained using the innovative technologies. The followed approach is both descriptive and quantitative. The description of the physical, chemical and / or biological changes induced to the food during a treatment is intended to assess the impact that the process has on the quality of the final products. The quantitative approach provides the tools for choosing the innovative process that tends to minimize the deleterious effects on food. For some of the proposed innovative processes, laboratory activities are planned with the aim of showing the plants and the effects on the treated food. Educational objectives (a) provide an adequate knowledge and a critical approach to develop projects related to the application of innovative technologies; (b) provide an adequate knowledge on instrumental approaches to determine the

	effect of the process on food quality.

Lecturer	Prof. Giovanna Ferrentino, NOI Technology Park, A2 building, via Ipazia 1, Bolzano, giovanna.ferrentino@unibz.it https://www.unibz.it/en/faculties/sciencetechnology/academic-staff/person/36045-giovanna-ferrentino
Scientific sector of the lecturer	AGR/15
Teaching language	English
Office hours	before and after the lectures or upon appointment
Teaching assistant	Dr. Abdessamie Kellil, NOI Technology Park, A2 building, via Ipazia 1, Bolzano, abdessamie.kellil@student.unibz.it
Office hours	before and after the lectures or upon appointment
List of topics covered	• Definitions and objectives innovative technologies applied in food processing • Innovative extraction of food components • Innovative pasteurization of food products • Innovative drying technologies of food products • Innovative Structure Modification • Applications of Innovative Technologies for Process Enhancement
Teaching format	The didactic activities provided are frontal classroom lessons in which the theoretical aspects of the course are discussed and explained with exercises and examples in which the applications of the innovative technologies presented in the classroom will be shown. Frontal teaching is provided using the most advanced methodologies, such as "case studies" and the most current tools such as power point slides, reviews, scientific publications, articles on magazines in the food sector and video. The presentations and the scientific articles used during the course will be made available to the students.

Learning outcomes	**Knowledge and understanding** The student will be stimulated to gain knowledge of the main innovative technologies in the food field. The main thermal and non-thermal technologies will be presented introducing the historical features, the description of the basic principles, the process parameters, the types of equipment and the effects on food. **Applying knowledge and understanding** The student will be able to apply the integrated and interdisciplinary knowledge acquired to choose the innovative processing technologies that can be used in the different production processes and to assess their impact on the safety, quality and functional properties of the obtained food.

	Judgement skills The student will be able to assess the applicability of innovative technologies in the food production and processing by highlighting the advantages and disadvantages deriving from their use. **Communication skills** The student will be able to describe and compare the traditional and innovative technologies applied in the food sector and their effects on the quality and safety aspects of the products using an appropriate technical-scientific terminology. **Lifelong learning skills** The student will be stimulated to access technical information with the aim of a continuous updating of knowledge.

Assessment	Oral exam with a PowerPoint presentation as concerns the topics and reports on laboratory activities.
Assessment language	English
Evaluation criteria and criteria for awarding marks	Successful completion of the examination will lead to grades ranging from 18 to 30 with honors. clarity of the presentation and the answers during the discussion, mastery of language (also concerning teaching language), ability to summarize, evaluate, and establish relationships between topics; critical thinking.

Required readings	• Keynotes and scientific papers provided by the lecturers • Emerging Technologies for Food Processing. Edited by:Da-Wen Sun • Supercritical Fluid Extraction: Principles and Practice. Edited by: Mark A. McHugh, Val J. Krukonis • Innovative Food Processing Technologies. Edited by: Kai Knoerzer and Kasiviswanathan Muthukumarappan
Supplementary readings	-