Syllabus

Course Description

Course Title	Food and wine science and technology and recovery methods of agro-food by-products
Course Code	40410
Course Title Additional	
Scientific-Disciplinary Sector	AGRI-07/A
Language	English
Degree Course	Bachelor in Enogastronomy in Mountain Areas
Other Degree Courses (Loaned)	
Lecturers	Dr. Edoardo Longo, Edoardo.Longo@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/35783 Prof. Emanuele Boselli, Emanuele.Boselli@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/37607 Prof. Giovanna Ferrentino, Giovanna.Ferrentino@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/36045 dr. Martina Moretton, Martina.Moretton@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/53223
Teaching Assistant	
Semester	Second semester
Course Year/s	2nd
CP	12
Teaching Hours	66
Lab Hours	54

Individual Study Hours	180
Planned Office Hours	33
Contents Summary	Part 1: Introduction to the study of food science and technology; Definition and construction of Table of food nutrients; Stability of food products; Technology for preserving food products; Technologies for homogenization and emulsification; Extraction technologies for the recovery of agro-food by-products. Part 2: Harvest decisions, grape ripening, sampling; Crushing and destemming, must handling, must additions and pressing; Fermentation biochemistry, yeast selection and inoculation, stuck fermentations; Malolactic fermentation (MLF), wine; style and MLF, controlling MLF; Barrel aging, clarification, fining, settling, cold stabilization, filtering, blending, bottling, closure systems; Introduction to sensory evaluation of wines; White and red winemaking, protection from oxidation, use of enzymes, maceration and stabilization techniques; Fundamentals of sparkling wine production; Use of the byproducts of the winery.
Course Topics	Part 1: Introduction to the study of food science and technology; Definition and construction of Table of food nutrients; Stability of food products; Technology for preserving food products; Technologies for homogenization and emulsification; Extraction technologies for the recovery of agro-food by-products. Part 2: Harvest decisions, grape ripening, sampling; Crushing and destemming, must handling, must additions and pressing; Fermentation biochemistry, yeast selection and inoculation, stuck fermentations; Malolactic fermentation (MLF), wine; style and MLF, controlling MLF;

	Barrel aging, clarification, fining, settling, cold stabilization, filtering, blending, bottling, closure systems; Introduction to sensory evaluation of wines; White and red winemaking, protection from oxidation, use of enzymes, maceration and stabilization techniques; Fundamentals of sparkling wine production; Use of the byproducts of the winery.
Keywords	Food science and technology; Food stability and preservation; Unit operations; Homogenization and emulsification; Extraction technologies; Agro-food by-products; Circular economy; Oenology; Grape ripening; Winery technology; Wine fermentations; Winemaking; Wine aging and stabilization; Wine sensory analysis; Sparkling wines; Winery by-products.
Recommended Prerequisites	Basic knowledge of chemistry, microbiology
Propaedeutic Courses	None
Teaching Format	Lectures with multimedia support; exercises and case-study discussions; laboratory activities and/or technical visits; Innovative teaching methods, such as group activities among participants (collaborative problem solving) and/or use of innovative information and communication tools, such as artificial intelligence tools.
Mandatory Attendance	No
Specific Educational Objectives and Learning Outcomes	The course gives a general overview of scientific contents. It is designed for acquiring professional skills and knowledge in the field of food and wine sciences and recovery methods of agro-food byproducts. It is divided into two parts, one related to food science and the other related to wine science with different lecturers. Educational objectives (a) provide an adequate knowledge and critical approach to develop projects related to the production of various types of food and wine products, taking into account technologies currently applied; (b) provide an adequate knowledge on chemical/instrumental approaches to determine food and wine quality.
Specific Educational Objectives and Learning Outcomes (additional info.)	

Assessment	Oral exam with a PowerPoint presentation aon the topics taught by Prof. Ferrentino and reports on laboratory activities carried out by Dr. Moretton; Oral exam with a PowerPoint presentation on the topics taught by Prof. Boselli and Dr. Longo
Evaluation Criteria	Successful completion of the examination will lead to grades ranging from 18 to 30 with honors. Criteria for awarding marks are: 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 • Food science and the culinary arts. Edited by Gibson, M. (2018). Academic Press. • Gastronomy and food science. Edited by Charis M. Galanakis (2021). Elsevier Academic press. • Introduction to the Chemistry of Food. Edited by Michael Zeece (2020). Elsevier Academic press.
Supplementary Readings	Ribéreau-Gayon P., Dubourdieu D., Donèche B., Lonvaud A. – Handbook of Enology – Vol. I and II (free pdf version available on the internet) • OIV technical standards and documents http://www.oiv.int/en/technical-standards-anddocuments • Introduction to Wine laboratory practices and procedures, JL Jacobson, Springer
Further Information	
Sustainable Development Goals (SDGs)	Good health and well-being, Decent work and economic growth, Partnerships fot the goals, Responsible consumption and production, Industry, innovation and infrastructure