Syllabus

Course Description

Course Title	Advanced Enology and Enography
Course Code	40463
Course Title Additional	
Scientific-Disciplinary Sector	AGRI-07/A
Language	Italian
Degree Course	Bachelor in Food and Enogastronomy Sciences
Other Degree Courses (Loaned)	
Lecturers	Prof. Emanuele Boselli, Emanuele.Boselli@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/37607
Teaching Assistant	
Semester	Second semester
Course Year/s	2
CP	6
Teaching Hours	36
Lab Hours	24
Individual Study Hours	90
Planned Office Hours	18
Contents Summary	The course provides theoretical and practical knowledge on the processing technology of dessert, flavored wines and other winery products, and other alcoholic and distilled beverages. Part of the lectures will be devoted to ingredients and coadiuvants used in enology. The detailed program includes selected topics in winemaking techniques and aging of wine. Cold maceration. Governo all'uso toscano. Copigmentation. The production of barrels. Innovative additives for winemaking. Carbon dioxide: physical chemical properties. Fortified and flavored wines. Vermouth. Dessert wines. Production technology of selected fortified and dessert wines: Vernaccia di Oristano, Marsala, Porto,

	Madeira, Sherry, Tokaj and Sauternes and others. Wine spirits and brandy: classification. Distillation principles and practices. Characteristics of raw materials, fermentation, distillation and aging. Pomace fermentation. Grappa, Cognac, Armagnac, Whisky, Rhum, Tequila, Sakè and other distilled beverages. Liquors and bitters. Production technology of vinegar and aceto balsamico. Laboratory workshop on selected topics of wine analysis. Visit to wineries, scientific symposia and/or fairs on wine technology and equipment. The part of enography includes the different characteristics and winemaking technologies of wines produced in different viticultural regions.
Course Topics	Advanced winemaking and ageing techniques; oenological ingredients, additives and processing aids; production of dessert, fortified and aromatised wines; distillation and production of spirits, liqueurs and bitters; vinegar production; selected wine analyses. Enography of major wine regions, with emphasis on grape varieties, wine styles and production technologies.
Keywords	Advanced enology; enography; wine ageing; oenological additives; special wines; distillation; spirits; wine analysis; wine regions; wine styles.
Recommended Prerequisites	Basic knowledge of enology and chemistry.
Propaedeutic Courses	
Teaching Format	Lectures, laboratory activities, case studies and/or educational visits.
Mandatory Attendance	No
Specific Educational Objectives and Learning Outcomes	Knowledge and understanding: Upon completion of their studies, graduates with a bachelor's degree in Food and Enogastronomy Sciences will have acquired a solid foundation of scientific knowledge in disciplines such as chemistry, physics, biology, mathematics, computer science, and law, specifically applied to the food and gastronomic sector. They will gain technological skills for managing production and transformation processes, along with an integrated view of the quality, safety, and sustainability of food supply chains and systems. In addition, graduates will understand the principles related to waste reduction, resource optimization, and the reconciliation of

	economics and ethics, which are central elements for addressing the modern challenges of the agri-food system. The knowledge and understanding skills mentioned above are acquired through participation in lectures, practical exercises, seminars, and through guided personal study and individual study as provided by the activated educational activities. The verification of the achievement of learning outcomes is mainly carried out through exams and any interim tests. The tests may be written and/or oral, and may also consist of reports and oral presentations of projects or seminars. Ability to apply knowledge and understanding: Students will be able to practically apply the knowledge they have acquired, developing the ability to solve complex problems in the food and gastronomic sector. Thanks to a wide range of practical activities, such as laboratories, internships, workshops, and seminars, they will be able to use chemical, physical, sensory, and microbiological analysis methods to evaluate the quality and safety of food and production processes. Graduates of the first profile will be able to manage food processing and preservation processes, design new technological solutions, and apply knowledge of plant genetics and process planning to ensure the quality of the final product. Graduates of the second profile will have advanced skills in managing restaurant businesses, promoting gastronomic heritage, and applying fermentation techniques and food design. In both paths, the ability to enhance by-products and reduce waste will be central, contributing to the sustainable innovation of the sector. The educational activities are designed to strengthen the autonomy of judgment and the ability to make decisions in complex contexts, as well as to develop communication skills and the ability to work in multidisciplinary and international teams. At the end of the program, graduates will be able to independently apply their knowledge in professional contexts, promoting innovative and sustainable solutions for the challenges of the agri-food and gastronomic system. The achievement of the ability to apply knowledge is accomplished through critical reflection on the texts proposed for individual study, stimulated by classroom activities, the study of research and application cases presented by the professors, the performance of

	practical laboratory exercises, fieldwork, bibliographic research, the completion of individual and/or group projects included in the core and elective courses of the curriculum, as well as during internships and the preparation of the final exam. The assessments, carried out through written and/or oral exams, reports, and exercises, involve the completion of specific tasks in which the student demonstrates mastery of tools, methodologies, and critical autonomy. During internships, the assessment is conducted through the presentation of a report by the student to the supervising professor. Making judgements: Evaluate and critically analyze the quality, safety, and sustainability of production processes and food products, considering scientific, technological, economic, and cultural aspects. Students will be able to make informed decisions based on scientific data and the analysis of production contexts to ensure the excellence of the final product. Apply ethical and sustainable approaches, reconciling economic needs with environmental and social requirements. Graduates will be able to identify solutions to reduce waste, enhance by-products, and optimize resource use, proposing food production models in line with the principles of the circular economy. Express independent judgments regarding innovative techniques for the transformation and enhancement of food and gastronomic productions, evaluating the risks and opportunities associated with the introduction of new technologies or business models, both locally and internationally. Interpret and manage complex data collected through chemical, physical, microbiological, and sensory analyses, in order to improve the quality of food products and effectively respond to food safety needs and regulatory requirements of the sector. Communication skills: Communicate effectively and appropriately with both technical and non-technical interlocutors, including professionals in the food and gastronomic sector, public and private institutions, and the general public. This includes the ability to adapt the communication style based on the audience, using the specific technical language of the food and gastronomic sector when necessary.

	Present and discuss the results of their analyses and research in both written and oral form, using technological and multimedia tools. Graduates will be able to draft technical reports, research papers, and scientific documents, as well as present their results clearly and structured, for example during conferences, seminars, or business meetings. Actively participate in discussions and group work in multidisciplinary and international contexts, demonstrating active listening, negotiation, and collaboration skills. Practical experiences and internships will provide students with the abilities to work effectively in teams and contribute to solving complex problems in the sector. Use the three languages of instruction of the course (Italian, German, and English) fluently and confidently, both for written and oral communication. Thanks to the trilingual approach of the Free University of Bozen-Bolzano, graduates will be able to face international work contexts, participate in global networks, and contribute to the development of international cooperation projects to address the challenges of the food and gastronomic sector. Learning skills: At the end of the degree program, graduates will have developed strong learning skills, essential for successfully continuing academic studies and entering the workforce. In particular, they will be able to: Learn autonomously and continuously, keeping up to date with scientific and technological advancements in the food and gastronomic sector. Graduates will have acquired study methods and research tools that will allow them to independently update their skills, critically interpreting new knowledge. Effectively manage the learning of complex concepts by integrating the various scientific and technical disciplines covered in the degree program, such as chemistry, biology, food technologies, economics, and law. They will be able to identify the most relevant sources, understand and apply new methodologies, and adapt to sector developments. Develop collaborative learning strategies, thanks to the experience gained through group work, internships, and laboratory activities. Graduates will be able to share their knowledge and learn from others, demonstrating adaptability and teamwork skills.

	Continue their studies independently in Master's degree programs (such as the LM-70 class, Food Science and Technology, currently offered at the same university) or in other related fields, using the skills and methods acquired during the bachelor's degree to tackle new learning challenges, even in high-level academic and professional contexts.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	Written examination consisting of multiple-choice questions and one open-ended question, and possible laboratory reports.
Evaluation Criteria	Knowledge of production technologies; ability to relate origin, composition and processing to wine style and quality; interpretation of analytical results; appropriate technical terminology.
Required Readings	Lecture notes, slides and additional materials provided by the lecturer.
Supplementary Readings	
Further Information	
Sustainable Development Goals (SDGs)	Good health and well-being, Quality education, Partnerships fot the goals, Industry, innovation and infrastructure, Responsible consumption and production, Decent work and economic growth