Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course Title	Innovation and authenticity in food processing
Course code	44750
Scientific sector	AGR/11 and AGR/15
Degree	Food Sciences for Innovation and Authenticity
Semester	I
Year	I
Academic year	2023/24
Credits	12 (6+6)
Modular	Yes

Module title	Novel Food
Module code	44750A
Scientific sector	AGR/11
Degree	Master in Food Sciences for Innovation and Authenticity
Semester	I
Year	I
Academic year	2023/24
Credits	6
Modular	Yes

Total lecturing hours	36
Total exercise hours	24
Attendance	Strongly recommended
Prerequisites	Students should be familiar with basic concepts of biology, zoology, entomology, botany and food technology but they are not strictly mandatory.
Course page	Course Offering / Free University of Bozen-Bolzano (unibz.it)

Specific educational objectives	**Aims** This course aims to provide an overview and concepts related to the topic of novel foods (food that was not consumed to a significant degree by humans in the EU prior to 15 May 1997), with particular emphasis on risk assessment and regulatory aspects in EU, insects and plants as novel foods, new substances, new techniques, new sources as novel foods, insect consumption around the world, actual and future trends of novel foods in Europe.

	Educational objectives At the end of the course, students should be able to: 1) understand the concept of novel foods; 2) insights on novel foods risk assessment; 3) explain health, economic and environment impacts of insect consumption as an alternative food source; 4) future trends in novel foods and possible impacts.

Lecturers	Prof. Sergio Angeli, Building K, Room 4.04, email: Sergio.Angeli@unibz.it Prof. Juliane Kleiner, Building K, email: Juliane.Kleiner@unibz.it
Scientific sector of the lecturer	AGR/11
Teaching language	English
Office hours	After class or by appointment. Please write to: Sergio.Angeli@unibz.it; Juliane.Kleiner@unibz.it
Teaching assistant (if any)	Veronica Carnio, Building K, Room 4.04, email: Veronica.Carnio@student.unibz.it
Office hours	After class or by appointment. Please write to: Veronica.Carnio@student.unibz.it
List of topics covered	The course will cover the following topics: 1. The concept of 'Novel Foods' in EU legislation. 2. Significance and importance of insects as novel foods. 3. Basic knowledge of entomology and edible insects 4. Insect species is authorised as novel foods: *Acheta domesticus, Gryllodes sigillatus, Locusta migratoria, Schistocerca gregaria, Tenebrio molitor, Alphitobius diaperinus, Zophobas atratus, Galleria mellonella, Achroia grisella, Bombyx mori*. 5. Potential new insect species under evaluations as novel foods. 6. Insects as a new source of bioactive compounds. 7. Source and production of novel food, practical considerations. 8. Actual and future trend of insects as novel food in European countries. 9. Novel foods from animals, cell or tissue cultures. 10. Novel foods from plants microorganisms, fungi, algae. 11. Novel foods through new production processes. 12. Novel Foods through new or modified molecular structure. 13. EFSA responsibility for risk assessment. 14. Health and legislation aspects. 15. Lab activity: Introduction to insect morphology, physiology and classification. 16. Lab activity: Extraction, physicochemical

	characterization of nutrients and bioactive molecules in edible insects.
Teaching format	This is a lecture-lab course in which topics are presented by the professors and the teaching assistant. Practical parts, lab activities, and excursions are explained by the professors and the teaching assistant. Generally, Power Point presentations are available in the course reserve collection database of the Faculty one day after each single lecture. Additional material will be provided by the professors. Lecture attendance is strongly encouraged.

Learning outcomes	**Knowledge and understanding** Students will gain knowledge and understand the relationship between new source of food and new processing and their nutrients/bioactive compounds for human consumption and human health as well as the reason of their adoption related to environmental concern and sustainability in modern agriculture. Students will gain knowledge of the EU regulation of Novel Foods and its effective functioning to ensure that Novel Foods placed on the market are safe under the proposed conditions of use, are not nutritionally disadvantageous and not misleading the consumer. **Applying knowledge and understanding** The students will be able to apply the theoretical knowledge of the course to practical problems. **Making judgments** Assessing the applicability of the novel foods by highlighting the advantages and disadvantages deriving from their use. The students will be able to critically evaluate the quality of nutritional and safety information of novel foods with regard to their health effects, as disseminated by the press, the web and other information sources. **Communication skills** Ability to communicate the acquired knowledge by using a correct scientific and technical language and terminology. **Learning skills** Ability to autonomously extend the knowledge acquired during the study course by reading and understanding scientific and technical documentation prepared by professionals and mass media.

Assessment	Successful completion of the examination will lead to grades

	ranging from 18 to 30 with honors. The performance evaluation of the students consists of a written final exam. The written exam will last up to 120 minutes and is made up of multiple choice questions and open questions.
Assessment language	English
Evaluation criteria and criteria for awarding marks	Criteria for the evaluation of the exam: correctness of answers; ability to summarize, evaluate, and establish relationships between topics of relevance; develop critical and independent thinking.

Required readings	Teaching material in the course reserve collection and additional material provided by the professors, assigned scientific papers.
Supplementary readings	Grasso S and Bordiga M. (*Eds*). 2023. *Edible insects processing for food and feed from startups to mass production*. CRC Press. Sogari G, Mora C, and Menozzi D (*Eds.*). 2019. *Edible insects in the food sector: methods, current applications and perspectives*. Springer. van Huis A and Tomberlin JK. 2017. *Insects as food and feed: from production to consumption*. Wageningen Academic Publishers. FAO. 2013. *Edible insects: future prospects for food and feed security.* Journal of Insects as Food and Feed Regulation (EU) 2015/2283 of the European Parliament and of the Council of 25 November 2015 on novel foods, amending Regulation (EU) No 1169/2011 of the European Parliament and of the Council and repealing Regulation (EC) No 258/97 of the European Parliament and of the Council and Commission Regulation (EC) No 1852/2001 Guidance on the preparation and presentation of an application for authorisation of anovel food in the context of Regulation (EU) 2015/2283. EFSA Journal 2016;14(11):4594, 24 pp.doi:10.2903/j.efsa.2016.4594 Ermolaos Ververis et. al. Novel foods in the European Union: Scientific requirements and challenges of the risk assessment process by the European Food Safety Authority Food Research International 137, Nov. 2020, 109515 https://www.sciencedirect.com/science/article/pii/S0963996920305408 https://www.efsa.europa.eu/en/efsajournal/pub/4594

	Evans J., Flore R. 2017. *On eating insects: essays, stories and recipes*. Nordic Food Lab (NFL), Phaidon Press

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Course code	44750
Scientific sector	AGR/15 and AGR/11
Degree	Food Sciences for Innovation and Authenticity
Semester	I
Year	I
Academic year	2023/24
Credits	12 (6+6)
Modular	Yes

Module title	Innovation and authenticity for winery products
Module code	44750B
Scientific sector	AGR/15
Degree	Food Sciences for Innovation and Authenticity
Semester	I
Year	I
Academic year	2023/24
Credits	6
Modular	Yes

Lecturer	Emanuele Boselli, NOITechPark, Via A. Volta 13B - Bolzano emanuele.boselli@unibz.it, +390471017217, https://www.unibz.it/en/faculties/sciencetechnology/academic-staff/person/37607-emanuele-boselli Edoardo Longo, NOITechPark, Via A. Volta 13B - Bolzano edoardo.longo@unibz.it, +39 0471 017691, https://www.unibz.it/it/faculties/sciencetechnology/academic-staff/person/35783-edoardo-longo
Scientific sector of the lecturer	AGR/15
Teaching language	English
Office hours	From Monday to Friday, before and after the lectures or upon appointment
Teaching assistant (if any)	Adriana Teresa Ceci Ceci (AdrianaTeresa.Ceci@unibz.it)
List of topics covered	Elements of basic enology: grape berry composition, traditional winemaking techniques, treatments for wine stabilization and storage. Innovative technologies and products: techniques for lowering or replacing chemical additives in wines with natural approaches; inert atmospheres and vacuum; closure systems, no/low sulfite wines; Piwi

	wines; innovations based on sustainability approaches and precision enology. Introduction to wine laboratory practices and procedures; basics of wine chemistry; conventional analytical procedures from berry to bottle; innovative approaches for the evaluation of authenticity of wines (for the determination of grape blends, geographical origin, winemaking practices). Elements of sensory analysis of wines
Teaching format	Classroom learning and/or distance learning, exercises, projects.

Learning outcomes	Knowledge and understanding (a) adequate knowledge and understanding about the development of projects related to the production of various types of wine and other winery products, taking into account innovative technologies and the official wine regulation; (b) provide an adequate knowledge of the authenticity aspects of wines and chemical/instrumental approaches to determine it. Applying knowledge and understanding (a) developing the capability of integration of information, both in horizontal way (technological, chemical, biological, and regulatory aspects involved in each innovative processing technology) and in vertical way (reasonable sequence of processes along the innovative wine production chain); (b) capability of carrying out strategies for the introduction of innovative processes in the wine sector; (c) capability of evaluating the potentiality of innovative technologies; (d) capability of applying the right chemical/instrumental technique to assess wine authenticity. Making judegments Capability of identifying the information needed to introduce sustainable innovations and to ensure/evaluate authenticity of wines and winery products with instrumental techniques. Communication skills capability of clearly and exhaustively communicate notions, ideas, problems and technical solutions to interlocutors, either professional or not, representative of the various and specific competencies in the wine supply chain (agronomists, engineers, biologists, chemists, nutritionists, administrators). Learning skills To get the learning skills that are necessary to update the winery plants and to obtain wine products with innovative

	technologies without loss of authenticity with a good level of autonomy.

Assessment	Final written exam consisting of multiple-choice questions and an essay on the topics of the programme
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. • relevant for written exam: clarity of answers, mastery of language (also with respect to teaching language), ability to summarize, evaluate, and establish relationships between topics; critical thinking

Required readings	Keynotes and scientific papers provided by the lecturers
Supplementary readings	Ribéreau-Gayon P., Dubourdieu D., Donèche B., Lonvaud A. – Handbook of Enology – Vol. I and II – free pdf version available in the internet OIV technical standards and documents http://www.oiv.int/en/technical-standards-and-documents Introduction to Wine laboratory practices and procedures, JL Jacobson, Springer 1.pdf (springer.com)