Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Molecular Techniques in Food Technologies: from Biotechnology to Authenticity
Course code	44725
Scientific sector	AGR/13
Degree	Master in Food Sciences for Innovation and Authenticity
Semester	I
Year	II
Academic year	2022/23
Credits	3
Modular	No

Total lecturing hours	18
Total lab hours	12
Total exercise hours	
Attendance	
Prerequisites	Basic knowledge of genetics and molecular biology
Course page	

Specific educational objectives	The course belongs to the area of learning that is affine to the Study Course (area affine integrativa) and specifically in the context of the disciplines of Food Sciences. The aim of the course is to provide students with an adequate mastership of general scientific principles at the base and methods exploited within this discipline as well as some specific professional knowledge. The aim of the course is to give an overview of the up-to-date molecular methods used to assess the authenticity of foodstuff, further completed with the analyses of case studies published in the literature. In particular, it is expected that the student acquires knowledge on the different molecular methods available and the specific characteristics of each one, so that he/she could become an autonomous user.

Lecturer	Youry Pii Office: K1.02 e-mail: youry.pii@unibz.it Phone: +390471017164 https://www.unibz.it/en/faculties/sciencetechnology/academic-staff/person/33704-youry-pii
Scientific sector of the lecturer	AGR/13
Teaching language	English

Office hours	From Monday to Friday upon appointment
Teaching assistant (if any)	
Office hours	
List of topics covered	1. Overview on genetic resources, their conservation and importance for agriculture and food production; 2. Genomics and molecular methods, including a view on the main 'omics' techniques (genomics, transcriptomics, proteomics and metabolomics) to apply for the analysis of genetic resources for food science and for food traceability (a) advanced DNA sequencing and amplification's technologies, molecular techniques and omics technologies (b) Data analysis through statistical methods and models and interpretation of the results. 3. Case studies: several examples of application of the most advanced technologies, the omics approach, in food science will be illustrated.
Teaching format	The course consists of lectures (18 hours of frontal lectures) during which the different topics will be presented and discussed. Practical lessons and laboratory activities (12 hours), conducted by the Teacher and the Teaching Assistants, are also foreseen. Course topics will be presented using Power Point presentations; all the Power Point presentations will be given to the students.

Learning outcomes	o *Knowledge and understanding* Students will acquire knowledge about the main omics technology applied for food authenticity. o *Applying knowledge and understanding* Students will be able to understand the basis of the omics techniques and they will be able to judge which method should be applied in specific cases. o *Making judgements* The knowledge acquired will allow students to make judgements and to manage the basis of methods applied in food authenticity. o *Communication skills* Students will acquire the ability to describe authenticity issues related to the agrifood chain processes and the technologies. o *Learning skills* Students will acquire the skills and expertise to widen and to update their knowledge about the contents and the topics discussed within the course.

Assessment	Oral and lab.

	The final assessment will consist in an oral exam, which will consist in a) questions to evaluate the knowledge and the understanding of the topics discussed during the classes and b) questions aimed at establishing the ability to apply such knowledge to hypothetical case studies. The ability to rework the experience acquired during laboratory exercises will also be evaluated.
Assessment language	English
Evaluation criteria and criteria for awarding marks	The final mark will be awarded based on the following criteria: the clarity of the response, the ability to summarize, evaluate, and establish relationships between topics.

Required readings	Sforza S. “Food authentication using bioorganic molecules” ISBN 978-1-60595-045-7
Supplementary readings	