Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Plant Biodiversity and Sustainable Cultivation Methods
Course code	40454
Scientific sector	AGR/03 + BIO/03
Degree	Bachelor in Food and Enogastronomy Sciences
Semester	II
Year	1
Credits	12 (6+6)
Modular	Yes

Total lecturing hours	72 (36 + 36)
Total lab hours	4 (0+ 4)
Total exercise hours	44 (24+ 20)
Attendance	Not compulsory but recommended. Strongly recommended the attendance to the excursions.
Prerequisites	-
Course page	

Specific educational objectives	*The course Plant biodiversity and environmental impact assessment gives a general overview of scientific contents and its educational objectives are:* *- Basic knowledge of biodiversity, agrobiodiversity, with particular regard to vegetation, ecosystems, land-use systems, and landscapes* *- Overview on concepts, methods, and approaches of plant diversity assessment* *- Structure and functions of plant organs* *- Basic information on plant systematics* *- Overview on edible plants of mountain areas with examples, referring to their ecology* *- Sustainable foraging and wild edible plants* *- Ecosystem restoration for useful plants* *- Wild plant identification in the lab and in the field* The module “Sustainable Cultivation Methods and Quality of Products for Food Processing” aims to provide students with scientific and technical knowledge on the main principles of primary production. In detail, sustainable cultivation methods of production will be considered especially under the framework of the mountain environment. Students will be provided with an overview of the main aspects of products’ quality and technologies to obtain and maintain the quality of agricultural products also during the post-harvest and processing phase

Module 1	Plant Biodiversity and Environmental Impact Assessment

Lecturer	Dr. Alessandro Bricca, mail: alessandro.bricca@unibz.it
Scientific sector of the lecturer	BIO/03
Teaching language	English
Office hours	By request
Teaching format	Frontal lectures, exercises
Lecturer	Dr. Fiona Jane White, mail: fionajane.white@unibz.it
Scientific sector of the lecturer	BIO/03
Teaching language	English
Office hours	By request
Teaching format	Frontal lectures, exercises
Lecturer	Prof. Stefan Zerbe, mail: Stefan.Zerbe@unibz.it, work phone: +39 0471 017150, office BZ K2.02
Scientific sector of the lecturer	BIO/03
Teaching language	English
Office hours	By request
Teaching format	Frontal lectures
Teaching assistant *(if any)*	*Name, office, e-mail, tel., lecturer's page*
Office hours	
List of topics covered	
Teaching format	*Frontal lectures, exercises, labs, projects, etc.*

Module 2	Sustainable Cultivation Methods and Quality of Products for Food Processing
Lecturer	Prof. Damiano Zanotelli Facoltà di scienze agrarie, ambientali e alimentari Piazza Università 5, 39100 Bozen-Bolzano, Edificio K, ufficio K2.06a Office: (+39) 0471 017121 email: damiano.zanotelli@unibz.it
Scientific sector of the lecturer	AGRI-03/A
Teaching language	Italian
Office hours	By appointment
Teaching assistant (if any)	*n.a.*
Office hours	-
List of topics covered	The module will cover the following topics: • overview of challenges and opportunities in the agri-food sector and mountain agriculture; • efficient management of resources (soil, water, light interception, mineral nutrition of crops) and plant-environment interactions (climate, weather events, meteorological variables) • cultivation methods (conventional, integrated, organic) and principles of agroecology; • Classification of agricultural products, and quality in the production, post-harvest and processing phase;

	• In-depth analysis of cereals, grain legumes, tuber foods, oilseeds, fruits and vegetables with a focus on high quality production
Teaching format	Frontal lectures, field excursions, laboratory activity, interaction with local stakeholders, group projects

Learning outcomes	The learning outcomes need to refer to the Dublin Descriptors: **Knowledge and understanding** of basic and applied aspects and methodologies in plant biodiversity and environmental impact assessment, and scientific topics related to biodiversity and environment; knowledge and understanding of human impact on mountain ecosystems and landscapes and the development of sustainable land-use strategies **Applying knowledge and understanding** of plant biodiversity and environmental impact assessment in land management, gastronomy, and the practice of nature conservation and ecosystem restoration **Making judgements** on biodiversity, and agrobiodiversity, anthropogenic ecosystem and landscape changes, human impact, management options, and sustainable landscape development **Communication skills** to present basic and applied aspects of plant biodiversity and environmental impact assessment to stakeholders, scientists, and the public clearly and unambiguously **Learning skills** allow the students to work in land management or gastronomy or continue their studies in a master program <u>Knowledge and understanding</u> Adequate knowledge and understanding of the main factors involved in primary production and the main characteristics of different cultivation methods. Adequate knowledge of the primary crops that contribute to meeting human food needs, with particular reference to the quality of the products. <u>Applying knowledge and understanding</u> Be able to analyze the positive and negative aspects of agricultural production in mountain contexts. Be able to recognize the main qualitative characteristics of agricultural products, both fresh and after preservation

	and processing. Making judegments Ability to critically evaluate the different levels of sustainability of cultivation processes, particularly in mountain contexts Communication skills Effectively communicate insights and findings related to crop production using clear, evidence-based reasoning in both written and oral formats. Ability to use appropriate technical language for communicating complex concepts Learning skills Cultivate critical thinking and problem-solving skills to address complex and evolving challenges in crop production and quality assessment.

Assessment	Modul 1: Written exam to test knowledge application skills Modul 2: Oral Examination and Project Work: The oral exam will include questions designed to assess the student's level of understanding of the topics covered during the course. The questions will also aim to evaluate the student's ability to solve case studies related to the management of cropping systems, as well as their capacity to develop critical thinking on the themes addressed in the course. Additionally, students will be required to conduct an in-depth group project focusing on a mountain agri-food product of their choice, to be developed and presented collaboratively.
Assessment language	English
Evaluation criteria and criteria for awarding marks	Modul I Clarity of answers, mastery of language (also with respect to teaching language), ability to summarise, evaluate, and establish relationships between topics Modul II The final grade will reflect the quality of the answers provided by the students during the exam, their ability to make connections between different topics, and their inclination to develop their own perspectives on current issues in the agricultural field. The group project report and its in-class presentation will form an integral part of the final grade. The course grade will represent the average of the grades obtained in the two modules.

Required readings	Modul I Stern K.R., Bidlack J.E., Jansky S.H. 2008. Introductory Plant Biology. Edition eleven. McGraw Hill. Zerbe, S. Restoration of multifunctional cultural landscapes. Landscape series, Springer (publication May 2022) Modul II Lecture materials shown in class and provided by the lecturer on the dedicated teams (Pdf).
Supplementary readings	Modul I Further study material will be provided by the lecturer Modul II These additional books are recommended: • Paolo Ceccon, Massimo Fagnano, Carlo Grignani, “Agronomia”, Edises, 2017 • Luigi Giardini, “L'agronomia per conservare il futuro”, Patron editore Bologna, 2012 • Francisco J. Villalobos, Elias Fereres, “Principles of Agronomy for Sustainable Agriculture”, Springer, 2016.