Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Mountain crop ecosystems
Course code	47301
Scientific sector	AGRI-03/A
Degree	Smart Sustainable Agriculture Systems in Mountain Areas (SAM)
Semester	1st
Year	1st
Credits	3
Modular	*no*

Total lecturing hours	18
Total lab hours	
Total exercise hours	12
Attendance	Not compulsory but recommended. Strongly recommended the attendance to the excursions.
Prerequisites	Students should have a basic knowledge of sustainable agricultural production
Course page	

Specific educational objectives	The course belongs to the class "characterizing" and specifically to the scientific and disciplinary area of horticultural crop production. It is aimed to provide knowledge and the scientific basis for the understanding of the ecological and productive functioning and management of crop ecosystems in mountain regions. Starting from the knowledge of the environmental resources and regulators, the course will deal with efficient production processes (E.g efficient use of radiation, irrigation, mineral nutrition, orchard floor management) considering the innovation in the field of smart-digital agriculture and the principles of agroecological transition. The course will not cover specific cropping systems, but different mountain farms will be used as case studies.

Lecturer	Damiano Zanotelli Faculty of Agricultural, Environmental and Food Sciences Free University of Bozano-Bozen K building – office: 2.06a e.mail: damiano.zanotelli@unibz.it https://treeecophysiology.unibz.it/
Scientific sector of the lecturer	AGRI-03/A
Teaching language	English

Office hours	By appointment
Teaching assistant *(if any)*	*n.a.*
Office hours	-
List of topics covered	The course will cover the following topics: • Introduction to the peculiarities of mountain agriculture (facts and figures, challenges, and opportunities) • Crop production protocols, sustainability, principles of agroecology • Sustainable management of soil and water in mountain agriculture • Adaptation and management of the main climatic variables in mountain agricultural systems • Analysis of specific case studies of mountain agriculture through lectures, exercises, field visits and the assignments.
Teaching format	Lectures, field excursions, group projects

Learning outcomes	<u>Knowledge and understanding</u> Demonstrate a thorough understanding of the unique characteristics of mountain agriculture and the sustainable crop production protocols and management strategies relevant to mountain agricultural systems. Understand the influence of climatic variables on agricultural systems in mountain areas and strategies for adaptation and resilience <u>Applying knowledge and understanding</u> Design and evaluate sustainable management plans for agricultural resources in mountain areas. Conduct practical evaluations and provide recommendations based on case studies of mountain agriculture <u>Making judgements</u> Critically assess the sustainability of current agricultural practices in mountain regions using agroecological and environmental frameworks <u>Communication skills</u> Effectively communicate insights and findings related to mountain crop production using clear, evidence-based reasoning in both written and oral formats. Collaborate with peers and stakeholders during field visits, exercises, and group assignments to share knowledge and develop practical solutions. <u>Learning skills</u> Develop the ability to independently acquire and synthesize new knowledge related to sustainable agriculture in mountain contexts. Cultivate critical thinking

	and problem-solving skills to address complex and evolving challenges in mountain agriculture.

Assessment	Oral and project works: In the oral examination the correctness of the answers, the mastery of the concepts and the ability to critically evaluate the different management options covered in the course will be assessed. A written project report done in groups and completed by a presentation in class will contribute to the final mark
Assessment language	English
Evaluation criteria and criteria for awarding marks	The oral exam and the project work will weight 70 and 30% of the final mark, respectively. The following criterial will be considered for the evaluation: • relevant for oral assessment: clarity of answers, ability to summarize, evaluate, and establish relationships between topics; • relevant for the group work assessment: ability to work in a team, creativity, skills in critical thinking, ability to summarize in own words

Required readings	The oral exam will be based on the content discussed in class and reported in the hand-outs of each lecture, which will be loaded on the dedicated Teams platform before each lecture. The group assignment is aimed at analyzing and presenting a selected case study of mountain agriculture starting from scientific papers provided on the dedicated Teams
Supplementary readings	The reference book regarding management of agricultural resources is: • Principles of Agronomy for Sustainable Agriculture. Villalobos F.J., Fereres E., 2016. Springer ISBN 978-3-319-46115-1 More references on selected topics are provided during the lectures in the form of articles from Scientific Journals.