

## Syllabus

### Course description

<b>Course title</b>	Sustainable farming systems in mountain areas
<b>Course code</b>	47044
<b>Scientific sector</b>	AGR/03 – AGR/19
<b>Degree</b>	Environmental Management of Mountain Areas
<b>Semester</b>	II
<b>Year</b>	<i>I</i>
<b>Academic year</b>	2020/21
<b>Credits</b>	9
<b>Modular</b>	Yes

<b>Total lecturing hours</b>	59 (24+35)
<b>Total lab hours</b>	
<b>Total exercise hours</b>	31 (16+15)
<b>Attendance</b>	Not compulsory, but recommended. Strongly recommended the attendance to the field activities.
<b>Prerequisites</b>	Students should have a basic knowledge of sustainable agriculture and animal production
<b>Course page</b>	<a href="https://next.unibz.it/en/faculties/sciencetechnology/master-environmental-management-mountain-areas/course-offering/">https://next.unibz.it/en/faculties/sciencetechnology/master-environmental-management-mountain-areas/course-offering/</a>

<b>Specific educational objectives</b>	<p>The course delivers detailed information on crop and livestock production systems as well as on wildlife management that provide economic opportunities for the mountain farms.</p> <p>Students will be able to evaluate such production systems and to identify weaknesses and strengths. Furthermore, they will be able to design production systems for a given area and adapt their management in order to improve their ecological and economic sustainability, and integration with the surrounding environment.</p>
--	---

<b>Module 1</b>	<b>Mountain Agriculture (MA)</b>
<b>Lecturer</b>	<p>Dr. Damiano Zanotelli  Piazza Università 5, 39100 Bolzano-Bozen,  office room K-3.03  e-mail: <a href="mailto:damiano.zanotelli@unibz.it">damiano.zanotelli@unibz.it</a>  phone: 0471-017121</p> <p>Dr. Giovanni Peratoner  e-mail: <a href="mailto:giovanni.peratoner@unibz.it">giovanni.peratoner@unibz.it</a></p>
<b>Scientific sector of the lecturer</b>	AGR/03 (Damiano Zanotelli) AGR/02 (Giovanni Peratoner)

<b>Teaching language</b>	English
<b>Office hours</b>	see timetable
<b>Teaching assistant (if any)</b>	Dott. Francesco Gubert
<b>Office hours</b>	-
<b>List of topics covered</b>	<p>The Module is divided in two parts of 2 CP each</p> <p>PART 1 (Damiano Zanotelli) will cover the following topics:</p> <ol style="list-style-type: none"> <li>1. Overview of mountain agriculture (fact and figures, challenges and opportunities)</li> <li>2. Ongoing trends and challenges, sustainable production protocols, principles of agroecology</li> <li>3. Soil and water management in MA</li> <li>4. Effects and management of climatic variables on agricultural systems</li> </ol> <p>PART 2 (Giovanni Peratoner) will cover the following topics:</p> <ol style="list-style-type: none"> <li>1. Agronomic traits of the main forage species</li> <li>2. Relationship between climate, management intensity, yield, botanical composition and forage quality</li> <li>3. Fertilisation with farm dung</li> <li>4. Management of pastures and meadows</li> <li>5. Forage conservation</li> </ol>
<b>Teaching format</b>	Lectures, Excursions

<b>Module 2</b>	<b>Livestock management in mountain areas</b>
<b>Lecturer</b>	Prof. Dr. Dr. Matthias Gauly, Universitätsplatz 5, Room K 1.10, <a href="mailto:matthias.gauly@unibz.it">matthias.gauly@unibz.it</a> , phone: 0471 017115, Webpage: <a href="https://www.unibz.it/en/faculties/sciencetechnology/academic-staff/person/34735-matthias-gauly">https://www.unibz.it/en/faculties/sciencetechnology/academic-staff/person/34735-matthias-gauly</a> N.N.
<b>Scientific sector of the lecturer</b>	AGR/19
<b>Teaching language</b>	English
<b>Office hours</b>	During semester, upon arrangement by email
<b>Teaching assistant (if any)</b>	-
<b>Office hours</b>	
<b>List of topics covered</b>	<p>The Module will cover the following topics:</p> <ol style="list-style-type: none"> <li>1. Structures of animal production in mountain areas</li> <li>2. Production and management systems in livestock (cattle, pigs, small ruminants, poultry, horses)</li> <li>3. Production and management of non-domesticated species (e.g. deer)</li> <li>4. Biology of selected wildlife species</li> <li>5. Management of large carnivores (wolf, bear, lynx) and interactions with livestock farming</li> </ol>
<b>Teaching format</b>	Lectures and excursions are followed by presentations of the students. Each student gives a presentation on a specific topic related to wildlife management.

<p><b>Learning outcomes</b></p>	<p><b>Knowledge and understanding</b> of the main characteristics of the agricultural and livestock production systems in mountain areas.</p> <p><b>Applying Knowledge and understanding</b> to identify in a given area, the main environmental and economic constraints that affects plant and animal production.</p> <p><b>Making judgments</b> to be able to identify for a given environment and production system, the most suitable management techniques in order to improve its economic and ecological sustainability.</p> <p><b>Communication skills</b> Ability to present and discuss the acquired knowledge using a scientific terminology and sound arguments.</p> <p><b>Learning skills</b> Ability to autonomously extend the knowledge acquired during the course by critically reading of scientific literature.</p>
<p><b>Assessment</b></p>	<p>The two modules of Agricultural Systems in Mountain areas (Mountain Agriculture and Livestock management in mountain areas) will be jointly assessed by oral exams on topics presented and discussed in classes and during the field activities, to be offered starting from the end of the course.</p>
<p><b>Assessment language</b></p>	<p>English</p>
<p><b>Evaluation criteria and criteria for awarding marks</b></p>	<p>The evaluation process takes place in the context of oral exam based on the correctness of the answers, on the language correctness, on the students' ability to argument their answers, to derive relationships and to create connections between the topics.</p> <p>In module 2 (Livestock management in mountain areas), the student presentation counts 30% and the oral exam 70% of the grade obtained in this module.</p> <p>The final grade for the entire course will be calculated as the weighted average (40% for module 1 and 60% for module 2) of the final grades obtained in the two modules.</p>
<p><b>Required readings</b></p>	<p>There is no single textbook that covers the content of the entire course.</p> <p>Selected chapters of the following textbooks:</p> <ul style="list-style-type: none"> <li>• Improved Grassland Management. John Frame. CSIRO publishing. 2011. ISBN: 9781847972613</li> <li>• The Future of Mountain Agriculture. Mann, Stefan (Ed.). Springer Geography. 2013. ISBN 978-3-642-</li> </ul>

	<p>33584-6</p> <ul style="list-style-type: none"> <li>• Fundamentals of Temperate Zone Tree Fruit Production. Tromp, Webster and Wertheim. Backhuys Publishers, 2005</li> </ul> <p>Hand-outs from lessons</p>
<p><b>Supplementary readings</b></p>	<ul style="list-style-type: none"> <li>• Tierernährung. Leitfaden für Studium, Beratung und Praxis. Manfred Kirchgeßner, 13/2011. ISBN 978-3-7690-0803-6, DLG-Verlag.</li> <li>• Tierzucht. Alfons Willam, Henner Simianer, 2011. ISBN 978-3-8252-3526-0, UTB.</li> <li>• Nutztierhaltung und -hygiene. Grundwissen Bachelor. Steffen Hoy, Matthias Gauly, Joachim Krieter, 2006. ISBN 978-3-8252-2801-9, UTB.</li> </ul> <p>More references will be mentioned during the lectures.</p> <p>Selected papers from Journals: Animal, Livestock Science, Journal of Animal Science and Dairy Science, Applied Animal Behaviour Science, Crop and Pasture Science; Agriculture Ecosystems and Environment, etc.</p>