# Syllabus

## *Course Description*

| | |
|---|---|
| **Course Title** | Plant and livestock health |
| **Course Code** | 47305 |
| **Course Title Additional** | |
| **Scientific-Disciplinary Sector** | AGR/11 |
| **Language** | English |
| **Degree Course** | Master in Smart Sustainable Agriculture Systems in Mountain Areas |
| **Other Degree Courses (Loaned)** | |
| **Lecturers** | dr. Letizia Debertolis,<br>Letizia.Debertolis@unibz.it<br>https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/50321<br>Prof. Dr. Hannes Schuler,<br>Hannes.Schuler@unibz.it<br>https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/34023 |
| **Teaching Assistant** | |
| **Semester** | Second semester |
| **Course Year/s** | 1 |
| **CP** | 6 |
| **Teaching Hours** | 36 |
| **Lab Hours** | 24 |
| **Individual Study Hours** | 90 |
| **Planned Office Hours** | 18 |
| **Contents Summary** | Part 1: Sustainable plant protection<br>The module will cover the following topics: 1. Principles of plant health, 2. Most important pests and diseases, 3. Sustainable plant protection, 4. Integrated pest management, 5. Biological control of plant pests, 6. Plant health in a changing world, 7. Case topics selected by the students. |

| | |
|---|---|
| | Part 2: Livestock health<br>The course will cover the following topics: 1. Basics of desinfection and hygiene, 2. Most common diseases in cattle, small ruminants, pigs and poultry, 3. Disease control, 4. Integrated disease management, 5. Sustainable agriculture and biological control, 6. Climate change and diseases in livestock, 7. Case topics selected by the students. |
| **Course Topics** | This course introduces students to aspects of plant and livestock health, emphasizing sustainable protection methods for both crops and animals.<br><br>Part 1: Sustainable Plant Protection<br>Students will explore the principles of plant health, learn about the most significant pests and diseases affecting crops, and study environmentally responsible techniques for plant protection. The curriculum covers integrated pest management (IPM), biological control methods using beneficial organisms, and addresses current challenges such as climate change and its influence on plant health. Real-world case studies, some chosen by students, encourage practical application and active engagement.<br><br>Part 2: Livestock Health<br>The lecture also focuses on maintaining livestock health, beginning with the basics of disinfection and hygiene. It examines common diseases in cattle, small ruminants, pigs, and poultry, and discusses various approaches to disease control, including integrated disease management and sustainable agriculture. The impact of climate change on livestock diseases is highlighted, and student-selected case topics foster deeper understanding and discussion.<br>Overall, the lecture equips students with a comprehensive understanding of sustainable health practices in plant and livestock systems, preparing them to address contemporary agricultural challenges through scientific knowledge and practical solutions. |
| **Keywords** | Sustainable agriculture, pests and diseases, biological control, integrated pest management, climate change |
| **Recommended Prerequisites** | |
| **Propaedeutic Courses** | No |
| **Teaching Format** | Lectures, Laboratory exercises, Excursions |

| | |
|---|---|
| **Mandatory Attendance** | No |
| **Specific Educational Objectives and Learning Outcomes** | Knowledge and understanding --><br>- actively participate in research projects in the field of mountain agriculture<br>- collaborate with other professionals in the fields of architecture, engineering and natural sciences<br>- work in interdisciplinary, national and international teams<br><br>Ability to apply knowledge and understanding -->Graduates of the Master SAM degree programme have a solid scientific and technical foundation that enables them to tackle and solve complex problems. Thanks to their scientific and technical training in the fields of agriculture, economics and management, graduates are able to develop analyses and plans for the development and management of farms in mountain regions, taking into account their specific characteristics and multifunctionality (ecosystem services). In these specialist areas, graduates are able to coordinate interdisciplinary teams in the agricultural sector.<br>The ability to apply the specialist knowledge acquired is achieved through critical reflection on the teaching materials offered and classroom learning activities, supplemented by case study analysis and practical exercises by teachers. In addition, there are practical exercises in the laboratory, on the computer and in the field, excursions, bibliographic research, the development of individual and/or group projects and the preparation of the final thesis.<br>The assessment of success (oral and written exams, seminar reports) and exercises are designed in such a way that graduates must demonstrate that they have mastered the tools of the trade, the methods learned and a critical and independent way of working.<br><br>Autonomy of judgement -->- choose the best production techniques, taking into account environmental protection;<br>- analyse data and information to independently assess the quality and effectiveness of the results obtained in the design of strategies to control difficulties<br>- make independent decisions on professional issues. These may relate in particular to the feasibility of projects in the field of |

| | |
|---|---|
| | agricultural activities<br>- plan activities and strategies on the basis of predefined objectives, taking into account timescales and methods<br><br>Communication skills --><br>Graduates will be able to work professionally in one or more foreign languages. Compulsory and elective courses are taught in English. In addition, some elective courses may be offered in Italian or German. In accordance with unibz's trilingual policy, the unibz Language Centre offers extracurricular courses (levels A1-C1) in Italian and German.<br>Graduates will be able to communicate fluently with other professional groups with whom they work and will be able to participate in European projects with foreign partners thanks to the international orientation of the Master's programme. Written and oral communication skills are promoted in seminars, excursions, exercises and teaching activities, which include the preparation of reports and written documents and their oral presentation in English and, where applicable, in Italian and German in elective subjects. The acquisition and assessment/verification of the above communication skills also takes place through the writing of the final thesis and its discussion in English. The master's degree programme also promotes the acquisition of additional language skills in German and Italian. This should enable graduates to successfully enter the international job market (e.g. Austria-Switzerland-Italy-Germany).<br><br>Learning skills --><br>Graduates will be able to manage complex projects thanks to the specialist knowledge acquired during their studies. They will be able to continuously expand the specialist knowledge acquired during their studies and keep it up to date. They will learn to use the most modern methods to be able to competently carry out analysis, project planning and management measures in their professional lives. Graduates will be able to use various IT systems to further their cultural and professional development. They will also be able to choose the methods and training paths best suited to their cultural and professional development. Graduates will be able to manage complex projects thanks to the specialist knowledge acquired during their studies. They will be able to |

| | |
|---|---|
| | continuously expand the specialist knowledge acquired during their studies and keep it up to date. They will learn to use the most modern methods to be able to competently carry out analysis, project planning and management measures in their professional lives. Graduates will be able to use various IT systems to further their cultural and professional development. They will also be able to choose the most suitable methods and training paths for their cultural and professional development.<br>Learning skills are encouraged throughout the degree programme. Particular attention is paid to individual study, especially in the completion of group work on the proposed topics. These skills are enhanced during compulsory lessons, which include group work, and subsequently in the preparation of the final thesis. Learning progress is assessed regularly during the courses and during the writing of the final thesis. In particular, this practice-oriented training involves working in small groups (3-5 students) on a joint project (e.g. a plan for the development of farms in mountain areas) from the initial stages (development of objectives and measures, collection of available data) to cooperation with various stakeholders (e.g. public administration, mountain agriculture advisory centre, farmers' association), which also includes communication activities for agriculture and society. The projects are carried out under the supervision of two or more teachers, with an exchange between students and private companies and/or the public authorities concerned.<br>Learning ability is assessed through continuous assessment during the learning units and in the preparation of the final thesis. |
| **Specific Educational Objectives and Learning Outcomes (additional info.)** | |
| **Assessment** | The assessment of both courses consists of two parts:<br>• Seminar presentation (30%)<br>• Final written exam (70%) |
| **Evaluation Criteria** | To pass the exam, both the seminar and the written exam must have been assessed positively.<br><br>Criteria for the assessment of the seminar presentation: correctness of the content, quality and clarity of the presentation and the ability to create a connection with related topics. |

| | |
|---|---|
| | Criteria for the assessment of the written exam: correctness and clarity of the answers. |
| **Required Readings** | Power Point presentations will be made available in the Reserve Collection database of the University. |
| **Supplementary Readings** | Xu X. & Fountain M (2019) Integrated management of diseases and insect pests of tree fruit. doi: https://doi.org/10.1201/9780429266690<br><br>Freeman B.E. (2021) Ecological and Economic Entomology: A Global Synthesis. ISBN : 978-1-78924-118-1<br><br>Dent D. & Bink R.H. (2020) Insect pest management 3rd Edition. ISBN : 978-1-78924-104-4 |
| **Further Information** | |
| **Sustainable Development Goals (SDGs)** | Zero hunger, Life on land, Responsible consumption and production |