

Syllabus

Course description

Course title	Phytopathology and Plant Protection
Course code	40176
Scientific sector	AGR/12 Plant Pathology
Degree	Bachelor in Agricultural and Agro-Environmental Sciences
Semester	1 st
Year	<i>III</i>
Academic year	2020/2021
Credits	8
Modular	No

Total lecturing hours	32 hrs Phytopathology + 20 hrs Plant Protection
Total lab hours	15 hrs Phytopathology
Total exercise hours	10 hrs Plant Protection
Attendance	Recommended
Prerequisites	Students regularly enrolled in the 3 rd year of the Bachelor Study Programme "Agricultural and Agro-Environmental Sciences"
Course page	https://next.unibz.it/de/faculties/sciencetechnology/bachelor-agricultural-agro-environmental-sciences/course-offering/

Specific educational objectives	<p>The course provides fundamental knowledge and skills in the field of phytopathology and plant protection. Students are first introduced into the basic concepts and terminology of plant disease, followed by the abiotic and biotic causes of plant diseases as well as the biology of the major pathogen groups and the etiology of diseases they induce. Further emphasis will be put on the understanding of how phytopathogens interact with their host plants as well as the role of environmental and genetic factors for the development of disease. Students will also acquire theoretical and practical knowledge on different diagnostic techniques for the detection of phytopathogens. Finally, students will be acquainted with basic concepts in epidemiology and different strategies for plant disease management and control. Absolvents of the course should be able to evaluate different methods of disease control and select appropriate disease management options.</p>
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Part 1	PHYTOPATHOLOGY
Lecturer	Prof. Dr. Sanja Baric, Building K – Room 4.04, Tel. 0471-017 118, sanja.baric@unibz.it
Scientific sector of the lecturer	AGR/12 - PHYTOPATHOLOGY
Teaching language	ENGLISH
Office hours	According to timetable and by appointment
Teaching assistant (if any)	Dr. Selena Tomada
Office hours	
List of topics covered	<p>The course will cover the following topics:</p> <ol style="list-style-type: none"> 1. Concept of disease in plants; types of plant diseases 2. Economic impact of plant diseases 3. Parasitism and disease development; stages in the development of disease: disease cycles 4. Environmental factors that cause plant diseases 5. Plant pathogenic viruses and viroids 6. Plant pathogenic prokaryotes: bacteria and mollicutes 7. Plant pathogenic fungi and fungal-like organisms: Ascomycetes; Basidiomycetes; Oomycetes 8. Plant pathogenic nematodes and other parasitic organisms 9. Genetics of plant disease: genetic variability; genetics of virulence in plant pathogens and resistance in host plants 10. Mechanisms of pathogen attack and defense of plants against pathogens 11. Environmental effects on the development of infectious plant diseases 12. Epidemiology of plant diseases and population dynamics of pathogens 13. Diagnosis techniques for plant pathogens
Teaching format	<p>This is a lecture-lab course with PowerPoint presentations and interactive elements, such as discussions and descriptive case examples. In the practical part, selected contents covered in the lectures, will be examined in greater depth. Short project papers on a topic of choice will be prepared by the students and presented to the class.</p>
Learning outcomes	<p>Knowledge and understanding: Students will gain fundamental knowledge on the biology of economically important plant pathogens and the etiology of diseases, and understand how plant pathogens and their host plants interact in the environment.</p> <p>Applying knowledge and understanding Students will be able to recognise and identify disease symptoms and signs, and formulate hypotheses about the causes of diseases.</p>

	<p>Making judgements Students will gain the ability to make informed judgments about the appropriate diagnostic technique and develop a strategy for disease control.</p> <p>Communication skills Students will improve their writing abilities by preparing a short project paper. Communication and presentation skills will be enhanced during interactive classes and student presentations.</p> <p>Learning skills Students will learn to retrieve scientific literature and to autonomously extend the knowledge acquired during the course by reading and compiling technical and scientific documents.</p>
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Part 2	PLANT PROTECTION
Lecturer	Prof. Dr. Sanja Baric, Building K – Room 4.04, Tel. 0471-017 118, sanja.baric@unibz.it
Scientific sector of the lecturer	AGR/12 - PHYTOPATHOLOGY
Teaching language	ENGLISH
Office hours	According to timetable and by appointment
Teaching assistant (if any)	Dr. Walther Waldner
Office hours	
List of topics covered	<ol style="list-style-type: none"> 1. Historical development of plant protection 2. Basic concepts of the control of plant diseases; quarantines and inspections 3. Physical control of pests and plant diseases 4. Biological control of pests and plant diseases 5. Biotechnological control of pests and plant diseases 6. Control of pests and plant diseases by chemical substances; methods of application; types of chemicals and mechanisms of action; legislative regulations 7. Integrated control of pests and plant diseases
Teaching format	This is a lecture-lab course with PowerPoint presentations and interactive elements, such as discussions and descriptive case examples. In the practical part, selected contents covered in the lectures, will be examined in greater depth.

Learning outcomes	<p>Knowledge and Understanding The students will know and understand fundamental terms, concepts and strategies for the control of pests and plant diseases, as well as the legislative regulations.</p>	
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	<p>Making judgements The students will have the ability to evaluate critically the advantages and disadvantages of various plant protection strategies.</p> <p>Communication skills Students will improve their communication skills during discussions in the lectures and exercises.</p> <p>Learning skills The students will learn where to find sources about the causes of diseases and pest damage, antagonists, maximum residue levels, approved active ingredients and pesticides and how to use them.</p>	
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Assessment	<p>The assessment consists of two parts:</p> <ul style="list-style-type: none"> • Written exam with review questions (70%); • Project work consisting of written lab reports, in which the results of the experiments are interpreted, and a presentation on a given topic elaborated, all performed in groups (30%)
Assessment language	English
Evaluation criteria and criteria for awarding marks	<p>The final mark is the weighted average between the two parts (70% written exam; 30% project work).</p> <p>Criteria for the evaluation of the written exam: correctness and clarity of answers; ability to summarize, evaluate, and establish relationships between topics.</p> <p>Criteria for the evaluation of the project work: correctness of the contents, ability to summarise in own words, quality and clarity of presentation, and the ability to establish a context with other related topics.</p>

Required readings	<p>Agrios G. N. 2005. Plant Pathology, 5th edition. Elsevier LDT, Oxford, 921 pp, ISBN 978-0120445653</p> <p>Hallmann J., Quadt-Hallmann A., von Tiedemann A. 2009. Phytomedizin: Grundwissen Bachelor, 2. überarbeitete Auflage. Ulmer Verlag (UTB) Stuttgart, 516 pp, ISBN 978-3825228637</p> <p>Poehling H.-M., Verreet J.-A. 2013. Lehrbuch der Phytomedizin, 4. Auflage. Eugen Ulmer Verlag Stuttgart, 600 pp, ISBN 978-3800151646</p> <p>Power Point presentations will be made available in the</p>
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	Reserve Collection database of the University.
Supplementary readings	Additional material will be provided by the lecturer.