General Information	
Academic subject	Plant Pathology
Degree course	Bachelor Course Agricultural Sciences and Technologies
Curriculum	Rural System Management
ECTS credits	6
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Stefania Pollastro	stefania.pollastro@uniba.it	AGR12

ECTS credits details			ETCs
Basic teaching activities	Plant Protection		4 lecture ECTs, 2 lab/field ECT

Class schedule	
Period	Second semester
Year	Third year
Type of class	Lectures 4 ECTS (32 hours) Laboratory and field classroom and workshops, 2 ECTS (28 hours)

Time management	
Hours	150
In-class study hours	60 (32 Lectures + 28 Lab & field cl.)
Out-of-class study hours	90

Academic calendar	
Class begins	February 24, 2020
Class ends	June 12, 2020

Syllabus	
Prerequisites/requirements	Basic knowledge of biology
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	*Knowledge and understanding* ○ Knowledge and understanding the main topics of plant pathology ○ Knowledge and understanding of main biological characteristics of biotic (phytopathogenic fungi, bacteria, virus and virus-like organism) and abiotic agents responsible of diseases of the main Mediterranean crops ○ Knowledge and understanding of diseases, symptomatology, plant-pathogen interactions, disease epidemiology also according to the knowledge of the disciplines of plant production. ○ Knowledge and understanding of the main interaction events between causal agent, host and environmental condition. ○ Knowledge and understanding of the main diagnostic tools in plant pathology. ○ Knowledge and understanding of the main aspects of mycotoxin contamination of food and feeds. ○ Knowledge and understanding of the basic principles of plant protection with particular regard to integrated pest management and organic agriculture. *Applying knowledge and understanding* ○ Ability to identify the causal agents of the main disease of Mediterranean crops protection. ○ Ability to evaluate the damages caused by abiotic and/or biotic agents. ○ Ability to manage the main methods in plant protection.

	○ Knowledge and understanding for defining a diagnostic approach in the field and/or in the laboratory. *Making informed judgements and choices* ○ Ability to understand the phenomena underlying the diseases, their spreading and harmfulness and their sustainable management. ○ Ability to understand the biological characteristics of the main taxonomic groups of phytopathogenic fungi. *Communicating knowledge and understanding* ○ Ability of describing the biological phenomena underlying plant diseases, their spreading and harmfulness. ○ Ability of describing the main diagnostic methodologies applied to plant diseases. ○ Ability of describing the main biological characteristics of plant pathogens and the disease typologies they cause. *Capacities to continue learning* ○ Capacities of updating the knowledge on the characteristics of different plant diseases and on sustainable plant protection. The results of the expected learning, in term of knowledge and ability, are listed in the Annex A of the Didactic Regulation of the Bachelor Course (expressed by the European descriptors of the study title).
Contents	Presentation of the course and brief history of Plant pathology Definition of disease, their economic importance and pathometry Classification of plant diseases Main morphological and functional plant alterations (plant modifications, alterations of cells and tissues, organs falling, withering, wilting, issuance of gums and resins, pathogens fructification, alterations of: photosynthesis, respiration, transport of carbohydrates, phenolic metabolism, water balance). Diagnosis of plant diseases Mechanisms used by pathogen to attack Mechanisms of passive and active resistance of the plant to disease Epidemiology (influence of environment on the development of plant diseases, the pyramid of the disease, environmental factors, the host, the pathogen, farming practices that favor the development of epidemics, estimates of epidemics) Overview of integrated and organic agriculture protection Mycotoxicology Main biotic factors responsible for plant diseases: fungi, bacteria, viruses, viroids and phytoplasma Outline of major abiotic factors: abnormal lighting conditions, water, thermal, atmospheric composition, meteoric adversity, nutritional imbalances, injuries, phytotoxicity Fungal diseases: case studies on grapes, olives, citrus, vegetables, cereals, artichoke, stone fruit, strawberry, bean and postharvest Bacterial diseases: case-studies on olives, citrus, grapevine, stone fruits, strawberry, strawberry, vegetables Viruses, phytoplasmas and non-parasitic alterations: case studies on vegetable, grapevine, stone fruit, citrus Laboratory and field practices Observations of plant disease samples in the laboratory and in the field, Observation of microscopic morphological characteristics preparations main agents of the disease Assessment of damage Application of the main diagnostic techniques
Course program	
Bibliography	Agrios G. (2005) Plant Pathology. 5th Edition. Academic Press, New York Janse J. D. (2006) Phytobacteriology: Principles and Practice. CABI Strange R. (2003) Introduction to Plant Pathology. Wiley

Notes	**Examples of websites** • http://bugs.bio.usyd.edu.au/learning/resources/PlantPathology/ • http://erec.ifas.ufl.edu/plant_pathology_guidelines/index.shtml • http://issuu.com/scisoc/docs/43818/1 • http://ohioline.osu.edu/hyg-fact/3000/ • http://www.apsnet.org/edcenter/intropp/LabExercises/Pages/Cytology.aspx • http://www.apsnet.org/edcenter/instcomm/TeachingArticles/Pages/TeachingPlantDiseaseDiagnosis.aspx • http://www.plantpath.wisc.edu/PDDCEducation/MasterGardener/General/Slide1.htm Additional material will be supplied on demand as scientific paper and website
Teaching methods	The topics of the course will be treated with the help of Power Point slides, web site and multimedia which are only educational support and not study materials, and through the creation of work groups on the resolution of case studies also with the support of external professionals (agronomists). For foreign students (LLP-Erasmus, Tempus, ecc.) presentations and teaching materials will be provided in English.
Assessment methods (indicate at least the type written, oral, other)	For students enrolled in the course of the year in which the teaching is done there will be an intermediary exam, which consists of an oral exam on the topics developed during the hours of lecture and theory and practice in the classroom, on the field and in the laboratory as reported in the Academic Regulations for the Course of Science and Technology Degree Agriculture (article 9) and in the study plan (Annex a). The evaluation of the intermediary exam is expressed in thirtieths. The outcome of the test contributes to the evaluation of the examination of profit and is valid for one academic year. At the end of the module teaching period, the students, who passed positively the intermediary exam, can give the final exam concerning on the subjects treated during the lessons and the practical activities since the intermediary exam, as reported in the Didactic Regulation of the Bachelor Course (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. Students who did not pass or give the intermediary exam will be examined on the whole subjects treated during the lessons and the practical activities as reported in the Didactic Regulation of the Bachelor course (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. The intermediary and the final exams consist of an oral test. The evaluation of the student is based on criteria previously fixed such as reported in the Annex A of the Didactic Regulation in Plant Medicine. The exam for foreign students can be given in English according to the above reported modalities.

Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are.	• *Knowledge and comprehension ability*
	  ○ Ability to understand and describe the main biological characteristics of biotic causal agents (fungi, bacteria, virus and virus-like)
	  ○ Ability to describe the eziology, epidemiology, symptomatology, plant-pathogen interactions, and diagnosis of diseases of Mediterranean crops.
	  ○ Ability to understand and describe phenomena due to biotic or abiotic factors.
	• *Knowledge and applied comprehension ability*
	  ○ Ability to recognize and understand the pfytopathological cases
	  ○ Ability to define the appropriate diagnostic approaches in the field and in the laboratory for different cases.
	  ○ Ability to recognize different disease typologies and to propose basic actions for their control.
	  ○ Ability to understand and apply the regulations in force.
	• *Autonomy of judgement*
	  ○ Ability to analyze phytosanitary cases formulating hypotheses on the disease presented as case of study and programming adequate procedures to manage and control the plant diseases.
	• *Communication skills*
	  ○ Ability to explain in exhaustive way, with appropriate words, richness of

	conceptual connections and examples, aetiology, aetiology, symptomatology, epidemiology, diagnosis and basic management of plant diseases as well as the biological characteristics of the main plant pathogens. • *Learning ability* ○ Ability to apply acquired knowledge and skills for problem solving in various operative frames. ○ Ability to apply acquired knowledge and skills for problem solving phytopathological events different from those studied. ○ Ability to apply knowledge and skills for improve the knowledge.
Further information	**Visiting hours** Official visiting hours: 8.30-16.30 according to an established appointment requested by phone or e-mail.