

COURSE OUTLINE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
ACADEMIC UNIT	CROP SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CRS_401	SEMESTER OF STUDIES	4 th
COURSE TITLE	Plant Pathology		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures		2	
Tutorials		1	
Laboratory exercises		2	
Total		5	5
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Specialised general knowledge		
PREREQUISITE COURSES:	Typically, there are no prerequisite courses.		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (english)		
COURSE WEBPAGE (URL)			

2. LEARNING OUTCOMES

<p>Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i> <i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>At the end of this course the student will further develop the following skills:</p> <ol style="list-style-type: none"> 1. Understand the meaning and importance of Plant Pathology in general as well as the importance of plant diseases in plant protection and their impact on agriculture and the general economic and social activities of humans. 2. Understand concepts and specific definitions of Plant Pathology 3. Be able to identify plant diseases according to their causal agent, and make correct diagnosis 4. Be competent in choosing the right control strategy in relation to food safety and offering alternatives. 5. have the opportunity to know how to gather information on cutting edge issues related to proper management of diseases and food safety. 6. be familiar with basic laboratory techniques of Plant Pathology (processing of fresh samples of diseased plants [study of symptoms, stereoscopy, microscope], diagnostic procedure).
<p>General Competences <i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <p><i>Search for, analysis and synthesis of data and</i> <i>Project planning and management</i></p>

<i>information, with the use of the necessary technology</i>	<i>Respect for difference and multiculturalism</i>
<i>Adapting to new situations</i>	<i>Respect for the natural environment</i>
<i>Decision-making</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Working independently</i>	<i>Criticism and self-criticism</i>
<i>Team work</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an international environment</i>	<i>.....</i>
<i>Working in an interdisciplinary environment</i>	<i>Others...</i>
<i>Production of new research ideas</i>	<i>.....</i>

Generally, by the end of this course the student will, furthermore, have developed the following general abilities (from the list above):

Decision making
Autonomous (Independent) work
Team work
Respect for the Environment
Promotion of free, creative and inductive thinking

3. SYLLABUS

<ol style="list-style-type: none"> 1. Purpose, significance and history of Plant Pathology. Concept of Disease 2. Disease Symptoms 3. Disease Signs 4. Basics of Plant Fungal Diseases: Morphology, Reproduction, Classification, most important plant pathogenic genera and species of True Fungi and Oomycetes. 5. Basics of Plant Bacterial Diseases: Morphology, Reproduction, Classification, most important genera and species of Bacteria. Bacterial Survival & Dispersion. Most common symptoms of plant bacteriological diseases. Bacterial pathogenesis and control strategies 6. Basics of phytoplasma and spiroplasma diseases 7. Basics of Plant Virology: Virus Morphology, Multiplication in host cells, Reproduction, classification, most important plant pathogenic viruses, symptoms of plant viral diseases, virus transmission, identification and control strategies. Basic knowledge about viroids. 8. Plant diseases caused by parasitic higher plants, invasive climbing plants and parasitic green algae. Non-parasitic plant diseases. Extreme temperatures. Nutrient deficits and toxicities. Phytotoxic pollutants in the atmosphere. 9. Mechanisms of Pathogenesis 10. Plant defense and The Immune System of Plants 11. The Quartet of Plant Diseases. 12. Principles and Methods of Diagnosis of Plant Diseases 13. Principles and Methods of Plant Disease control <p>Laboratory exercises:</p> <ol style="list-style-type: none"> 1. Health and safety rules in the laboratory. Principles of plant disease study. 2. Description and microscopy study of mycelia and specialized spores and fruiting bodies of fungi. 3. Stereoscopy and microscopy study, identification and classification of major plant pathogenic fungi (Oomycetes, Ascomycetes Basidiomycetes and Adelomycetes) 4. Identification of symptoms, signs and causal agents of important plant diseases (downy mildew, mildew, rust, etc.). 5. Processing of fresh plant samples with fungal, bacteriological, virological and non - parasitic diseases. 6. Field practice

4. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Lectures in class and laboratory exercises in the lab, face to face.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of Information and Communication Technologies (ICTs) (e.g. powerpoint) in teaching. The contents of the course of each chapter are uploaded on the internet, in the form of a series of

	pdf files that the students can freely download using a password which is provided to them at the beginning of the course.	
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	Activity	Semester workload
	Lectures (2 contact hours per week x 13 weeks)	26
	Laboratory work (2 contact hours per week x 6 weeks)	12
	Field practice	12
	Tutorials (1 contact hour per week x 13 weeks)	13
	Hours for private study of the student, preparation and attendance mid-term or/and final examinations.	62
	Total number of hours for the Course (25 hrs of work-load per ECTS credit)	125 hours (total student work-load)
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<ol style="list-style-type: none"> 1. Mandatory written examination, with full length questions and / or multiple-choice questions, as well as questions based on the laboratory work. Minimum pass grade= 5, scale 0-10. Total degree contribution 70%. 2. Mandatory assignment, maximum evaluation degree = 3. Total degree contribution 30%. 3. Final degree = sum 1+2. 4. All the above are conducted in Greek and for foreign language students (e.g. ERASMUS students) in English). 	

5. RECOMMENDED LITERATURE

<p><i>Suggested bibliography:</i></p> <ol style="list-style-type: none"> 1. Agrios G. N. Plant Pathology 5th Edition. 2015. Academic Press. <p><i>- Related academic journals:</i></p> <ol style="list-style-type: none"> 1. Journal of Plant Pathology. International journal edited by the Italian Phytopathological Society. Springer. 2. Plant Pathology. International journal edited by the British Society for Plant Pathology. Wiley.
