**COURSE LAYOUT**

1. **GENERAL**

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| **SCHOOL** | SCHOOL OF PLANT SCIENCES | | | | |
| **DEPARTMENT** | DEPARTMENT OF CROP SCIENCE | | | | |
| **STUDY LEVEL** | *Undergraduate* | | | | |
| **COURSE CODE** | **1850** | **SEMESTER** | | 8th | |
| **COURSE TITLE** | Plant Pathology | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** | | | **WEEKLY TEACHING HOURS** | | **ECTS** |
| Lectures and Practicals | | | 3+2 | | 5 |
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| **COURSE TYPE** | Scientific area | | | | |
| **PREREQUISITES** |  | | | | |
| **LANGUAGE** | Greek | | | | |
| **IS THE COURSE OFFERED for ERASMUS STUDENTS?** | No | | | | |
| **COURSE WEB PAGE** | [not](http://efp.aua.gr/el/mathima/740) available in english | | | | |

1. **LEARNING OUTCOMES**

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| **Learning Outcomes** | |
| **The course is the main introductory** course in the concepts of plant diseases and their causal agents. **Upon successful completion of the course the student will be able to**:   * understand the concept of a biotic or abiotic plant disease, and the biotic (fungi, bacteria, viruses, viroids, phytoplasmas) or abiotic (abiotic factors/unfavorable environmental conditions) causal agents involved, respectively. * recognize symptoms and signs of plant diseases * understand the biology/reproduction of plant pathogens (fungi, bacteria, viruses, viroids, phytoplasmas) and their interaction with the plants during pathogenesis * understand the spread of a transmissible plant disease and the factors affecting its epidemiology * understand the basic concepts of plant disease control depending on the causal agent * understand the epidemiology and control of representative diseases of vegetable and fruit tree crops * acquire the skills to recognize the symptoms of major plant diseases of vegetable and fruit tree crops and diagnose the causal agent of the disease via the microscopic observation of the signs of the main groups of Fungi and Oomycetes in order to design efficient control strategies. * Be updated on top issues related with plant diseases and plant pathogens. | |
| **General competences** |
| ● Decision-making  ● Individual/Independent work  ● Group/Team work | |

1. **COURSE CONTENT**

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| The object of the course 'Phytopathology' is to provide knowledge on a theoretical and practical level about plant diseases and their causes, the biology of the main phytopathogens and their interaction with plants, as well as the basic principles for treatment of plant diseases.  **Theory**   * The concept of plant disease * Symptoms and sings of plant diseases * Principles of fungal plant pathogens (morphology, taxonomy, reproduction, pathogenesis, epidemiology, most important fungal plant pathogens and oomycetes and symptomatology of diseases caused) * Principles of bacterial plant pathogens (morphology, taxonomy, reproduction, pathogenesis, epidemiology, most important bacterial plant pathogens and symptomatology of diseases caused) * Phytoplasmas and Spiroplasmas * Principles of Plant Virology (taxonomy, identification, replication and transmission of plant viruses and viroids, symptoms, pathogenesis, epidemiology and control of plant virus and viroid diseases) * Abiotic plant diseases * Pathogenesis mechanisms of plant pathogens and plant defense mechanisms (passive and active defense mechanisms, hypersensitive response, induced and acquired systemic resistance) * Inherent immune system of plants (recognition of plant –pathogens, secretion of effectors, signal transduction and μεταγωγή σήματος and expression of endurance) * Principles of plant disease epidemiology * Principles of plant disease diagnosis * Principles of plant disease control * Representative plant diseases of major crops   **Laboratory**  The purpose of the laboratory is to provide knowledge on the identification of plant diseases and the diagnostic process.  Students are trained in the basic principles for studying plant pathogens, stereoscopic and microscopic observation, identification and classification of the main phytopathogenic fungi, oomycetes and bacteria. Students are trained in the distinction and recognition of symptoms, signs of important plant diseases (downy mildew, powdery mildew, rust, anthracnose, wilt disease, etc.). In addition, they perform bioassays for viruses and viral diseases.  The thematic units in the form of laboratory exercises concern:  - FUNGI: Mycelial structures - Reproduction - Classification (macroscopic observation of sclerotia, microscopic observation of non-septate and multicellular mycelium, septa, sporangia, rhizoids)  - CHROMISTA (CHROMISTA) Home: Pythiaceae (macroscopic observation of oomycetes cultures, microscopic observation of mycelium, zoosporiangia, oospores)  - CHROMISTA: Household: Peronosporaceae (observation of spots and mycelial signs in diseased plant samples, microscopic observation of sporangiaphores)  - FUNGI (FUNGI): ASCOMYCOTA (observation of spots and signs in diseased plant samples, microscopic observation of cleistothecia)  - FUNGI (FUNGI): BASIDIOMYCOTA (observation of blisters and rust in diseased plant samples, microscopic observation of teliospores)  - ADELOMYCETES or IMPERFECT FUNGI Deuteromycetes- Mitosporic fungi- Fungi imperfecti (observation of spots and signs in diseased plant samples, microscopic observation of acervuli, conidia, conidiophores)  - PROKARYOTIC DISEASES (observation of tumors in diseased plant samples)  - ΙΟΙ: Bioassays (mechanical infections in plant indicators)  - NON-PARASTIC DISEASES (observation of nutritional deficiencies in plant samples) |

1. **TEACHING and LEARNING METHODS - Evaluation**

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| **TEACHING METHOD** | In class |
| **USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES** | * E-class platform * Power-Point slides * Online databases * Communication with students using e-class platform and email |
| **TEACHING ORGANISATION** | |  |  | | --- | --- | | *Activity* | *Work Load* | | Lectures | 13x3 = 39 h | | Practicals | 10x2 = 20 h | |  |  | | Study at home | 66 h | |  |  | |  |  | |  |  | | ***Course total***  ***(25 hours of student work load per ECTS)*** | ***125*** | |
| **STUDENTS EVALUATION** | Written final exams (100%) in Greek (for the Greek students) or English (for the Erasmus students) including,  for the theory   * + - Multiple choice questions     - Short answer questions   and for the practicals   * True/false questions * Identification of plant pathogens * Indentification of plant diseases |

1. **BILBIOGRAPHY**

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| *Theory: Tjamos, E. (2007) Plant Pathology. Stamoulis Press.*  *Agrios. G. (2005). Plant Pathology. 5th edition. Academic Press.*  *Practicals: Laboratory exercises of Plant Pathology. Plant Pathology Laboratory. Agricutlural University of Athens.*  *Scientific journals and books*:  *Disease and Pest Compendia Series (Published by The American Phytopathological Society).* |