**Code: 1469** **Plant Pathology**
**Degree:** 2nd cycle – Agriculture; Forestry and Natural Resources
**Stream:** Agriculture - Plant Protection;
Forestry and Natural Resources – Arboriculture and Urban Forestry
**Curricular Year: 1st** **Semester Course: 2nd**
**Credits: 6 ECTS** **Optional**
**Language:** Portuguese/English
**Responsible:** Maria Helena Mendes da Costa Ferreira Correia de Oliveira
**Other lecture(s):** Ana Paula Ferreira Ramos and Arlindo Lima
**Web Site:** http://www.isa.utl.pt/home/node/3828

**1. Contact hours:**
**Lectures** 28 **Practicals/Laboratory** 42 **Others** 14 **Total** 84

**2. Objectives:**

The course aims to provide students with theoretical knowledge, and practical/laboratorial expertise on the following subjects:
i) disease causing agents, their characteristics and variation;
ii) genetic and molecular basis of plant-pathogen interactions; and
iii) development of a plant disease into an epidemic.

**3. Programme:**

The course consists of different theoretical and practical elements on the following topics:
I. Morphology and biology of plant pathogens (pseudofungi, fungi, bacteria, phytoplasmas, virus and nematodes). Mechanisms of variability in pathogens. Classical and molecular techniques used for the characterization and analysis of variation of pathogens.
II. Plant-Pathogen Interactions:
- Genetics of virulence in pathogens and of resistance in host plants. The gene-for-gene concept. Pathogenicity and avirulence (*avr*) genes. Resistance (R) genes of plants.
- Host defense mechanisms. Preexisting and induced defenses. R genes and host recognition, signal transduction pathways. Hypersensitive response (HR). Systemic acquired resistance (SAR).
III. Plant disease epidemiology
Measuring disease and pathogen populations. Temporal and spatial aspects of epidemiology. Modeling disease progression. Forecasting dieases epidemics. Case-studies.

**4. Bibliography:**

**Main Bibliography**

Agrios G. 2005. *Plant Pathology*. 5th Ed., Elsevier, Academic Press, San Diego.
Trigiano, R. N., Windham, M.T. and Windham, A.S.(Eds). 2007. *Plant Pathology: Concepts and Laboratory Exercises*, 2nd Ed, CRC Press LLC, Boca Raton, FL
Francl L. J., Neher D.A. (Eds) 1997. Exercises in Plant Disease Epidemiology.

**Other Bibliography**

Ronald P. C. 2007. *Plant-Pathogen Interactions. Methods and Protocols*. Humana Press, New Jersey.

**5. Assessment:**

To have the frequency the students could not miss more than 5 sessions in the semester and to have his Laboratory notebook up-date.
Continuous assessment:
a) two written questionnaires concerning the content of the 3 didactic units (50%);
b) one seminar (25%) and
c) the personal laboratory notebook (25%).
Final examination: written exam concerning theoretical and practical courses (as alternative to continuous assessment).

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| **6.** Estimated Workload: | 168 | Hours |
| **7.** Last Update: | 19/7/2010 | |