Code: 1407 **Weed Science**
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: Ana Maria da Silva Monteiro
Other lecture(s): -
Web Site: http://www.isa.utl.pt/home/node/3826

1. Contact hours:
Lecture/Practicals 70 **Others** 14 **Total** 84

2. Objectives:

Knowledge acquisition by the students:
1) Systematic, biology, ecology and epidemiology of weeds. Weed population dynamics.
2) Weed management systems for some horticultural crops, pastures, forests, nurseries, gardens, protected areas, aquatic areas, and other no-crop situations like roads, monuments, golf areas according to the principles established by IOBC – International Organisation for Biological an Integrated Control – and EPPO – European and Mediterranean Plant Protection Organisation.

3. Programme:

Biology, ecology and weed identification Concept of weed and invasive plant species. Biology and ecology of annual and perennial weeds. Systematic and identification of weeds -seedling and vegetative stage. Weed phenological scales. Succession. Seed reproduction. Vegetative reproduction. Dissemination of weed seeds. Weed seeds in soil: germination and survival. Weeds and their environmental importance. Methods applied on the biological studies of annual and perennial weeds. Weed population dynamics. Seed soil bank dynamic. Constitution and evolution of weed populations. Weed communities. Interference and crop-weed competition; economic and damage thresholds. Interaction with pests and diseases Methods of weed survey. Statistical analysis. **Weed/invasive plant species management systems**: Preventive weed management. Mechanical and physical weed management. Biological weed management. Other methods of non-chemical control: Prevention on the introduction of new weeds. Herbicides: Selectivity. Herbicide phytotoxicity. Mechanisms of weed resistance. Case studies of weeds resistant in Portugal. HRAC scale (Herbicide Resistance Action Committee). Herbicide application equipment and techniques. Conditions and time of herbicide application. Biotechnology and weed science; transgenic crops. Weed management in biological and precision farming systems. **Weed management programs in agricultural and no agricultural areas.** ***Project work:***Development during the semester of an experimental study about any weed science subject, with a final report, like a paper, with no more than 10 pages, with a solid bibliographic revision. The work will be presented in a seminar to the colleagues.

4. Bibliografia:

Bibliografia Principal

Moreira, I. & Monteiro, A. (Eds.) (1996). Cadernos de Herbologia. 1. Conceitos Gerais. Elementos de apoio às aulas de Herbologia. Instituto Superior de Agronomia. AEISA. 15 pp.

Moreira, I. & Monteiro, A. (Eds.) (2000). Cadernos de Herbologia 2. Biologia de Infestantes. Elementos de apoio às aulas de Herbologia. Instituto Superior de Agronomia. AEISA. 66 pp.

Moreira, I. & Monteiro, A. (Eds.) (2002). Cadernos de Herbologia 3. Meios de Controlo. Elementos de apoio às aulas de Herbologia. Instituto Superior de Agronomia. AEISA. 65 pp.

Espirito-Santo, M.D. & Monteiro, A. (2009). Infestantes das culturas agrícolas. Chaves de identificação. 2ªEdição. ISA*Press*. 97 pp.

Bibliografia Complementar

Moreira, I. (coord.), Vasconcelos, T.; Caixinhas, L. & Espírito Santo, D. (2000). Ervas daninhas das vinhas e pomares. 2ª Edição. Departamento de Protecção das Plantas e de Fitoecologia. Instituto Superior de Agronomia. Direcção Geral de Protecção das Culturas. 209 pp.

Vasconcellos, J.C. (2000). Infestantes das searas. Chaves dicotómicas para a sua identificação antes da floração. 2ª Edição. Direcção Geral de Protecção das Culturas. 169 pp.

Radosevich, S.; Holt, J. & Ghersa, C. (1997). Weed Ecology. Implications for management. 2ª Edition. John Wiley & Sons, Inc. New York. 589 pp.

Hatfield, J.L.; Buhler, D.D. & Stewart, B.A. (eds.) (1998). Integrated weed and soil management. ANN ARBOR PRESS. Michigan. 385 pp.

5. Assessment:

- To be admitted to the Final Exam, the students are obliged to participate at least at 75% of the total of the Practical classes;
- Their participation implies their presence and evaluation of the acquired knowledge.
- For the evaluation there are two options:

1ª) development during the semester of an experimental study, individual, and final report, like a paper, with no more than 10 pages, with a solid bibliographic revision. The work will be presented in a seminar to the colleagues;
2ª) other a Final Exam – handwrite or/and oral discussion.

6. Estimated Workload: 168 Hours

7. Last Update: 19/7/2010