

Code: 1406 Multifunctional Management of Ecosystems**Degree:** 2nd cycle – Environmental Engineering; Forestry and Natural Resources**Stream:** Environmental Engineering – all; Forestry and Natural Resources – Forestry; Forest Products**Curricular Year:** 1st**Semester Course:** 2nd**Credits:** 6 ECTS**Compulsory** (FNR - Forestry)**Language:** Portuguese/English**Optional** (EnvEng; FNR – Forest Products)**Responsible:** Jorge Manuel Martins Soares David**Other lecturer(s):** João Manuel Dias dos Santos Pereira, José Guilherme Martins Dias Calvão

Borges, José Miguel Oliveira Cardoso Pereira, Manuel Armando Valeriano Madeira and Miguel Nuno Bugalho

Web Site: <http://www.isa.utl.pt/home/node/3816>**1. Contact hours:****Lecture/Practicals 70 Others 14 Total 84****2. Objectives:**

It is intended that students acquire an integrated knowledge on the environmental benefits that forest ecosystems may provide, namely: water resources, carbon sequestration, soil quality, biodiversity and wildlife. The approach will be integrative and will focus on the need of compromise as well as on possible conflicts between different management options. The active participation of students will be stimulated through selected readings (scientific and technical) and presentations.

3. Programme:

I - Management of vegetation according to type, density and distribution (in time and space) towards the optimization of the quantity and quality of water resources. Case studies.

II - Management of vegetation towards the increase of carbon sequestration and biodiversity. Mitigation of climate change effects. Effects of environmental changes on ecosystem vegetation. Conservation. Invasive species. Case studies.

III - Management of vegetation and residues towards the maintenance and improvement of soil quality and ecosystem sustainability. Case studies.

IV - General concepts of natural resources management and biodiversity conservation. Applications to the management of forest ecosystems. Case studies.

V - Management of vegetation towards the optimization of wildlife resources. Effects of wildlife on vegetation. Case studies.

VI - The importance of support-decision modelling techniques in multifunctional resources management. Case studies.

4. Bibliography:**Main Bibliography**

Copies of powerpoints and notes from lectures. Selected scientific papers (updated each year).

Other Bibliography

Book chapters and technical and scientific papers, updated each year.

5. Assessment:

Evaluation of IV through a presentation. Final exam for the remaining subjects.

6. Estimated Workload:

168 Hours

7. Last Update:

24/2/2011