

Code: 1396 Natural Resources Management**Degree:** 2nd cycle – Forestry and Natural Resources**Stream:** all**Curricular Year:** 2nd**Semester Course:** 1st**Credits:** 6 ECTS**Compulsory** (all the others)**Language:** Portuguese/English**Optional** (Forest Products)**Responsible:** José Guilherme Martins Dias Calvão Borges**Other lecturer(s):** Pedro César Ochoa de Carvalho**Web Site:** <http://www.isa.utl.pt/home/node/4187>**1. Contact hours:****Lecture/Practicals 70 Others 14 Total 84****2. Objectives:**

To understand how advanced methods and computer use may enhance natural resources management and conservation. To gain experience in applying landscape-level scheduling models with emphasis on problem formulation and interpretation of results - To explore specific methods and tools that are of interest to the individual student.

3. Programme:

1. Introduction to ecosystem management planning. Modeling and ecological-economic decision analysis. Recent perspectives on sustainable forest ecosystem management; spatial and temporal scales.

2. Economics and project evaluation. Practical application of economic principles and concepts to natural resource problems. Non-market goods and services associated with natural and environmental resources, and methods for estimating the value of these goods and services. Ecosystem management and conservation projects evaluation: topics and strategies. Management planning at the landscape-level and economic analysis at the local stand level.

3. Multi-objective ecosystem management planning. Strategic planning for timber production (models I and II). Exact and heuristic approaches for addressing multiple ecological and economic goals. Scenario analysis; Hoganson-Rose simulation approach. Integrating risk and uncertainty in ecosystem management planning; the case of forest fires. Multiple decision makers and group decision methods. Tactical and operational management planning. Land classification and transportation; logistic problems.

4. Information and communication technologies (ICT) in natural resources management. Information systems planning and architecture. Decision support systems; databases, simulators, decision modules and graphical user interfaces. artificial intelligence and knowledge-based systems. Regional and holding forest management planning; components, traditional and recent ICT-based approaches

5. Seminar. Analysis of ecosystem management planning case-studies to explore problems that are of interest to the individual student with the participation of researchers and technicians in the forest sector.

4. Bibliography:**Main Bibliography**

- Davis, L., K.Johnson., P. Bettinger e T. Howard. 2001. Forest management to sustain ecological, economic and social values. Ed. 4. McGraw Hill Publishing Company, New York.

- Kangas, A., J. Kangas and M. Kurttila. 2008. Decision suport for forest management. Springer. Managing Forest Ecosystems 7.

- Instructor handouts (notes and exercices)

Other Bibliography

- Buongiorno, J. and J. Giles. 2003. Decision methods for forest resource managers. Ed 1. Academic Press

- Forestry journals papers

5. Assessment:

Course requirements include the presentation of a class summary (10%), a class project (30%)and a final exam (60%).

6. Estimated Workload:

168

 Hours

7. Last Update:

21/7/2010
