

Code: 1422 Applied Operational Research**Degree:** 2nd cycle – Forestry and Natural Resources**Stream:** all**Curricular Year:** 1st**Credits:** 6 ECTS**Language:** Portuguese/English**Responsible:** José Augusto Lopes Tomé**Other lecturer(s):** -**Web Site:** <http://www.isa.utl.pt/home/node/3818>**Semester Course:** 2nd
Compulsory**1. Contact hours:****Lecture/Practicals 70 Others 14 Total 84****2. Objectives:**

The course is an introduction to mathematical programming: linear programming, linear integer programming and dynamic programming. PERT/CPM techniques are also taught.

Special emphasis is given to linear modeling, focusing on how problems can be expressed as linear programs and the interpretation of computer outputs.

Examples and laboratory exercises are applications of the different methods to natural resource management problems, mainly forest management problems.

The emphasis is not in how particular methods work, but rather how they can be used.

3. Programme:

Linear programming: basic elements, assumptions, graphical solution methods, simplex method, duality and economic interpretation, sensitivity analysis and post-optimization.

Goal programming.

Linear integer programming, brief introduction to the branch-and-bound algorithm.

PERT/CPM. Dynamic programming.

4. Bibliography:**Main Bibliography**

Hillier, F. S. e G. J. Lieberman, 2010. Introduction to Operations Research. McGraw-Hill, Inc., New York.

Other Bibliography

Buongiorno, J. E J. K. Gilless, 2003. Decision Methods for Forest Resource Management. Academic Press, Amsterdam

5. Assessment:

Two mid-term tests and/or final examination

6. Estimated Workload:

168	Hours
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7. Last Update:

25/2/2011
