



IPP - ISCAP



Degree: Master, Logistics APNOR
Curricular Unit: Management Tools
Academic Year: 2015-16

Term: Winter term

Credits: 6 ECTS

Contact Hours: 3 hours (TP) per week

Lecturer: Prof. Isabel Vieira (mivieira@iscap.ipp.pt or isabelvieira4@gmail.com) – Office 315

Online Support: ISCAP website: Moodle (<https://online.iscap.ipp.pt/ano201516/>)

Objectives: Provide quantitative techniques. Many of the relationships in Economics, Business and Finance are quantitative in nature. This nature helps these subjects apply various mathematical tools in their analysis of relationships.

Learning outcomes:

- To provide the students with the skills that are needed to succeed in the field of management like Financial Mathematics, Linear Programming Models
- To guide the students in the learning process using an intuitive approach and illustrating the various topics with application examples
- To encourage the students to use computational tools through practical exercises.

Syllabus:

1. Linear Programming (LP)
 - 1.1 Basic concepts and terminology
 - 1.2 Graphical Method
 - 1.3 Simplex Method
 - 1.4 Solving LP problems using the Simplex Method
 - 1.5 Two Phases Method
 - 1.6 Typical problems of Operational Research (OR)
 - Diet
 - Mixing
 - Cutting
 - Transportation
 - Employment
 - Transshipment
 - Shortest path
 - Max-flow
 - 1.7 Sensitivity Analysis
 - 1.8 Application of the EXCEL Solver to solve LP Problems
2. Financial Mathematics
 - 2.1 Simple interest system
 - 2.2 Compound interest system: compound interest and discount
 - 2.3 Constant annuities
 - 2.4 Repayment loans. Conventional types of reimbursement
 - 2.5 Investment analysis
 - 2.6 Application of EXCEL's financial functions in each of the topics

Bibliography:

- Bronson, R., "Theory and Problems of Operations Research". Schaum's Outline, McGraw-Hill, Inc., 2001.
- Day, Alastair L, "Mastering Financial Mathematics in Microsoft Excel", Market Editions-Prentice Hall, 2005.
- Hillier, F.S., Lieberman, G.J., "Introduction to Operations Research", 6th Edition. McGraw-Hill, Inc., 2005.
- Zima, P., Brown, R.L., "The Mathematics of Finance". Schaum's Outline, 1996.

Assessment:

Continuous or Final Evaluation

Students may choose between the two systems of evaluation and must inform the professor of their choice.

Pre-requisites:

Equations, Matrices, EXCEL