

# 27C01000 Business Decisions 1 (6 cr)

## SYLLABUS

14.10.2016

Instructor's contact information	Course information
Juuso Liesiö juuso.liesio@aalto.fi G4.13, Chydenia, Runeberginkatu 22-24 Office hours: After lectures at BIZ Lounge in Otaniemi or by appointment	Status: Bachelor's programme, Business Technology, common programme studies. Period: II Autumn (2016-2017) Language: English Web-page: mycourses.aalto.fi

### 1. OVERVIEW

Management Science (MS) deals with the application of analytical models to help make better decisions. The terms Operations Research and Business Analytics are sometimes used as synonyms for MS. MS covers a wide range of problem-solving and mathematical modelling techniques that help managers to improve decision-making and efficiency.

This course focuses on MS methods based on mathematical optimization such as Linear Programming, Mixed-Integer Linear Programming and Non-Linear Programming. These methods are introduced through applications in, for instance, production planning & scheduling, logistics, marketing and finance. The course also introduces approaches for modelling uncertainties and multiple decision objectives in optimization models.

### 2. PREREQUISITES

Basic skills in spreadsheet software.

### 3. LEARNING OUTCOMES

After the course the student can (i) recognize the types of real-life business decision problems where use of the models brings added value, (ii) interpret results of these models to derive defensible decision recommendations, and (iii) build and solve these models using spreadsheets to support business decision making.

### 4. ASSESSMENT, GRADING, EXAM FEEDBACK

Final points consist of exam point (40%) and assignment points (60%). The final points determine the course grade as follows: >50p → 1, >60p → 2, >70p → 3, >80p → 4, and >90p → 5, with the exception that at least half of the exam points are required to pass. These bounds maybe relaxed during final grading.

### 5. ASSIGNMENTS

There are three assignments with deadlines on roughly the third, the fifth and the sixth week of the course. Each assignment consists of several problems or cases, which usually require the use of spreadsheets or other mathematical software to solve. The total points are not equal for all three assignments.

## 6. READINGS

Lecture and assignment material, and the textbook: An Introduction to Management Science by Anderson et al. (2010, ISBN Code: 978-1111532222, 2014, ISBN Code: 978-1-111-82361-0).

## 7. PRELIMINARY SCHEDULE

There are two 2h lectures and one 2h exercise session per week.

Week	Topic
1	Introduction; Linear programming (LP)
2	LP sensitivity analysis; Applications to distribution and problems
3	Guest lecturer from Business
4	Integer and Mixed-Integer linear programming (MILP) and applications
5	Non-linear programming (NLP); Modelling uncertainties
6	Multi-objective programming; Course summary

## 8. COURSE WORKLOAD

Classroom hours	36h
Class preparation	12h
Assignments	92h
Preparing for the exam	17h
Exam	3h
Total	160h (6 cr)

## 9. ETHICAL RULES

Aalto University Code of Academic Integrity and Handling Thereof>

<https://into.aalto.fi/pages/viewpage.action?pageId=3772443>

## 10. OTHER ISSUES

Register to course in MyCourses. Course materials excluding the text book are distributed in MyCourses.