Syllabus

Name:

Decision Support Systems

Responsible:

Professor Christoph M. Flath, Assistant Professor for Operations Management

Programme:	**Term:**	**ECTS:**
Master	Winter	5

Contents & Objectives:

The course teaches advanced approaches for modeling and solving decision problems in business settings. These insights are leveraged to design and implement decision support systems using standard software tools.

After successfully completing the course, students should be able to

- Understand the structure of classic business decision problems
- Isolate key elements from general problem descriptions and convert them to quantitative decision models
- Solve different classes of optimization problems (linear, network, integer, multi-objective, non-linear, stochastic)
- Implement spreadsheet-based decision support systems

The course loosely builds on top of the "Managerial Decision Modeling" by Cliff T. Ragsdale. [1] Additional sources include "Stochastic Programming" by Birge and Louvreaux as well as "Mathematical Applications for the Management, Life, and Social Sciences" by Harshbarger and Reynolds.

Prerequisites:

The course is designed for Master students with a working knowledge in quantitative methods.

Course Structure:

Week	**Content**	**Literature / Chapter**
1-3	Linear Programming	Ch. 1-3
4	Sensitivity Analysis	Ch. 4
5-6	Network Modeling	Ch. 5
7	Stochastic Programming	Birge & Louvreaux
8-9	(Mixed) Integer Programming	Ch. 6
10	Goal Programming, Multiple Objective Optimization	Ch. 7
11-12	Non-linear Programming	Ch. 8
13	Markov Chains	Harshbarger and Reynolds
14	Queuing Theory	other

Literature:
[1] Ragsdale, Cliff T. *Managerial decision modeling*. South-Western, Cengage Learning, 2011.
Exam:
60-minute final written exam
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