

Syllabus

Name:		
Decision Support Systems		
Responsible:		
Professor Christoph M. Flath, Assistant Professor for Operations Management		
Programme:	Term:	ECTS:
Master	Winter	6 CP
Contents & Objectives:		
<p>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.</p> <p>After successfully completing the course, students should be able to</p> <ul style="list-style-type: none"> • 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 <p>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.</p>		
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. <i>Managerial decision modeling</i> . South-Western, Cengage Learning, 2011.
Exam:
60-minute final written exam
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