

Code G-2.2	Quantitative Techniques for Planning and Decision Making
Dipl. Agrar: 8728	

Objective

Gaining competence in the use of quantitative techniques for planning and decision support and of approaches for their integration into the enterprise information environment.

Content

1. The planning process as information and decision problem
 - 1.1 Stages of the planning process
 - 1.2 Decision problems in planning processes
 - 1.3 Information requirement and information provision

2. Planning problems and modelling approaches
 - 2.1 Classification of planning and decision problems and their relationship with model categories
 - 2.2 Generic planning model
 - 2.3 Approaches for consideration of multiple objectives, risk and time

3. Planning and decision models
 - 3.1 Mathematical Programming
(Modelling alternatives; consideration of space/time/risk problem scenarios in enterprises and the sector)
 - 3.2 Probabilistic models (Markov, queuing, logistics models)
 - 3.3 Decision tree/analysis, Dynamic Programming
 - 3.4 Network models (e.g. PERT, CPM)
 - 3.5 Simulation (e.g. Monte Carlo), expert systems
 - 3.6 AHP-Analytical Hierarchy Process

4. Formulation of optimization models for different problem scenarios (especially enterprise decision problems)
 - 4.1 Modelling alternatives
 - 4.2 Formulation of models for selected problem scenarios
 - 4.3 Integration of models into decision processes
 - 4.4 Solution of decision problems including the consideration of risk

5. Formulation of simulation models for process optimization
 - 5.1 Identification and documentation of processes
 - 5.2 Formulation of process simulation models
 - 5.3 Determination of solutions

6. Integration of models into decision support systems (DSS)

Literature	Parts from Hanf, Schiefer, Planning and Decision in Agribusiness, Elsevier as well as from OR textbooks like Hillier, Lieberman, Introduction to Operations Research, Holden Day; Winston, Albright, Practical Management Science, Duxbury; Brosh, Quantitative Techniques for Managerial Decision Making,
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Prentice Hall.